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The Graft Theory of Disease, being an application of Mr. Darwin's Hypothesis of Pangenesis to the explanation of the phenomena of the Zymotic Diseases. By JAMES ROSS, M.D., Waterfort, near Manchester. London: J. & A. Churchill, 1872.

The Abuse of Alcohol in the Treatment of Acute Diseases. A Review. By T. P. HESLOR, M.D., Phys. to the Queen's and Children's Hospitals, Birmingham. London: J. & A. Churchill, 1872.

Syphilis; its Nature and Treatment. With a Chapter on Gonorrhœa. By CHARLES ROBERT DRYSDALE, M.D., M.R.C.S., Phys. to the Metropolitan Free Hospital, etc. London: Baillière, Tindall & Cox, 1872.

Chloroform and Substitutes for Relief in Pain. By CHARLES KIDD, M.D., M.R.C.S., Eng., etc. London: Renshaw, 1872.

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On the Functional Diseases of the Renal, Urinary, and Reproductive Organs, with a general Review of Urinary Pathology. By D. CAMPBELL BLACK, M.D., L.R.C.S., Edin., Member of the General Council of the University of Glasgow, etc. Philadelphia: Lindsay & Blakiston, 1872.

The Science and Practice of Medicine. By WILLIAM AITKEN, M.D., Edin., Prof. of Pathology in the Army Medical School. Third American from the Sixth London edition, greatly enlarged, remodelled, carefully revised, and many portions rewritten; adopting the new nomenclature, and following the order of classification of diseases published by the Royal College of Physicians of London. With additions by MEREDITH CLYMER, M.D. (Univ. Penn.), ex-Prof. of the Inst. and Prac. of Med. in Univ. of New York, etc. In two volumes, with steel plate, map, and one hundred and eighty wood-cuts. Philadelphia: Lindsay & Blakiston, 1872.

The Treatment of Syphilis with Subcutaneous Sublimate Injections. By Dr. GEORGE LEWIN, Prof. at the Fr.-Wilh. Univ. and Surgeon-in-Chief of the Syphilitic Wards and Skin Diseases of the Charité Hospital, Berlin. Translated by CARL PRÆGLER, M.D., Late Surgeon in the Prussian Service and in the U. S. A., and E. H. GALE, M.D., Late Surg. U. S. A. Philadelphia: Lindsay & Blakiston, 1872.

Epidemic Cerebro-Spinal Meningitis. With an Appendix on some points on the Causes of the Disease as shown by the History of the present Epidemic in the city

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Thermic Fever, or Sunstroke. By H. C. WOOD, JR., M.D., Prof. of Medical Botany, and Clin. Lect. on Dis. of Nervous System in Univ. of Penna., Phys. to the Philadelphia Hospital. Boylston Prize Essay. Philadelphia: J. B. Lippincott & Co., 1872.

General and Differential Diagnosis of Ovarian Tumours, with Special Reference to the Operation of Ovariectomy, and Occasional Pathological and Therapeutical Considerations. By WASHINGTON L. ATLEE, M.D. With thirty-nine illustrations. Philadelphia: J. B. Lippincott & Co., 1873.

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Medical Register. New York and vicinity. For the year commencing June 1, 1872. Published under the supervision of the New York Medico-Historical Society, A. E. M. PRUDY, M.D., Editor. Vol. X. New York: Wm. Wood & Co., 1872.

The Prescription and Clinic Record. New York: Wm. Wood & Co.

The Physiology of Man; designed to represent the existing state of Physiological Science, as applied to the Functions of the Human Body. By AUSTIN FLINT, JR., M.D., Prof. of Phys. and Phys. Anat. in the Bellevue Hosp. Med. Coll., N. Y.; etc. etc. Nervous System. New York: D. Appleton & Co., 1872.

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Parasitological Investigations upon the Vegetable Organisms found in Measles, Typhus Exanthematicus, Typhus Abdominalis, Smallpox, Kine-pock, Sheep-pock, Cholera, etc. By Dr. ERNST HALLIER, Prof. in Jena. Translated from the German, with an Appendix, by HENRY C. PERKINS, M.D., Newburyport. Boston: David Clapp & Son, 1872.

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Annual Report of the Board of Trustees of the Charity Hospital, of Philadelphia. Philadelphia, 1872.

State Medical Society of Ohio. Annual Address of the Retiring President, W. W. DAWSON, M.D. Cincinnati, 1872.

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Transactions of the State Medical Society of Michigan, for the year 1872. Lansing, 1872.

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Proceedings of the Academy of Natural Sciences of Philadelphia, Oct., Nov., Dec., 1871. Philadelphia, 1872.

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Archiv der Heilkunde, 1872. Zweites und Drittes Heft.

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Centralblatt für die Medicinischen Wissenschaften, 1872. Nos. 23 to 37.

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Revue de Thérapeutique Médico-Chirurgicale. Nos. 12 to 17, 1872.

La Revue Scientifique de la France et de l'Etranger. Nos. 50 to 53; 2d series, No. 1 to 10, 1872.

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Le Mouvement Médical, 1872. Nos. 23, 24, 25; nouvelle série, Nos. 1, 3, 4, 5, 8, 9.

La Tribune Médicale, 1872. Nos. 198 to 212, except Nos. 200, 204, 205, and 207.

The Half-Yearly Abstract of the Medical Sciences. January to June, 1872.

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ART. I.—*Experimental Researches on Pericarditis.* By S. H. CHAPMAN, M.D., of New York. (With 12 wood-cuts.)

As these observations furnish additional proof<sup>1</sup> of the truth of the opinions held by Stricker in his controversy with Cohnheim, it is necessary to direct attention to this interesting controversy, which has been continued since 1865 and renewed at the general assembly of scientific men at Leipzig in August of this year.

About two years after the discovery by Stricker<sup>2</sup> that red blood-corpuscles can emigrate through the injured walls of capillary vessels, Cohnheim<sup>3</sup> discovered, that, in the mesentery of the living frog, when drawn out of the abdominal cavity and prepared for microscopical research, large numbers of white corpuscles are to be seen emigrating from the vessels and wandering through the tissues. This discovery gave rise to the theory of Cohnheim, that pus-cells are emigrated white blood-corpuscles. He denied the truth of Virchow's theory that connective-tissue corpuscles undergo division during the inflammatory process in order to be transformed into pus-cells; and gave proof of his theory by the observation that the cornea corpuscles do not change during the process of inflammation in the cornea. Moreover he injected anilin into the bloodvessels before exciting the cornea, and found, after having produced an inflammation in this tissue, pus-cells in the inflamed cornea, bearing anilin. Cohnheim argued therefore the following results, namely: first, that pus-

<sup>1</sup> The specimens collected by me upon this subject during these studies were exhibited by Professor Stricker in the course of his argument, for examination by the general assembly at Leipzig.

<sup>2</sup> Sitzungsberichte der Wiener Akademie, 1865.

<sup>3</sup> Virchow's Archiv, 1867.

cells and white blood-corpuscles are (which is a well-known fact) not to be distinguished from each other; and secondly that the formation of pus-cells out of cornea corpuscles has never been really observed; thirdly, that the emigration of pus-like corpuscles is a well-observed fact; and fourthly, that the possibility of wandering of these cells into an irritated tissue is sufficiently known. He says therefore that it is a fact that pus-cells emigrate from the vessels and invade the neighbouring tissue, but it is only a not-proved hypothesis that cornea corpuscles can change into pus-cells. Stricker and Norris,<sup>1</sup> of Philadelphia, opposed that it is not true that the cornea corpuscles do not change in the inflammatory process. They observed that the stellated cornea cells (Cohnheim called them "fixed" cells) after the cornea had been excited to inflammation, draw back their processes, multiply their nuclei by division and become amœboid. Stricker observed directly the division of such larger cells into smaller ones. He argued then as follows: Pus-cells are, like white blood-corpuscles, young cells; and for this reason they are not to be distinguished from one another: a young cell, born of a cornea (stellate) cell by division, is amœboid, like a white blood-corpuscle, like all young cells; in seeing therefore a young cell (pus-cell) no one can make out from where it originates. The pigment anilin injected into the bloodvessels has been seen by Stricker and Norris in the stellated corpuscles of the inflamed cornea. The pigment bearers can therefore as well be daughters of these stellate cells as emigrated white blood-cells. The histologists of Cohnheim's school began to deny altogether the transformation of tissue into pus-cells. Stricker and his pupils, on the other hand, proved step by step that all living cells can change by division into pus-cells, thus returning to the embryonal stage.<sup>2</sup> Kundrat<sup>3</sup> proved this for the endothelia of the peritoneum. Durante<sup>4</sup> for the endothelia of the veins. S. H. Chapman<sup>5</sup> for the endothelia of the pericardium.

At the suggestion and with the careful criticism of Professor Stricker, the studies described in the following pages were conducted in the Laboratory for Pathological Research, in order to compare artificially-produced pericarditis with the disease in man. In order to study to advantage the inflamed tissue, that is, to recognize slight changes from the normal con-

<sup>1</sup> Studien aus dem Institute für experimentelle Pathologie, 1869.

<sup>2</sup> It is the theory of Stricker and his pupils that all living cells are liable, under the influence of inflammation, to divide and multiply into pus-cells or embryonal cells; that these embryonal cells are capable of fully developed growth, forming anew all the elements of a tissue; but that, as, in the production of species, only a small fraction of the embryos grows to full development, so, here, the great mass of embryonal cells is wasted as pus, while the small remnant alone attains a new and full growth.

<sup>3</sup> Medizinische Jahrbücher, 1871.

<sup>4</sup> Medizinische Jahrbücher, 1872.

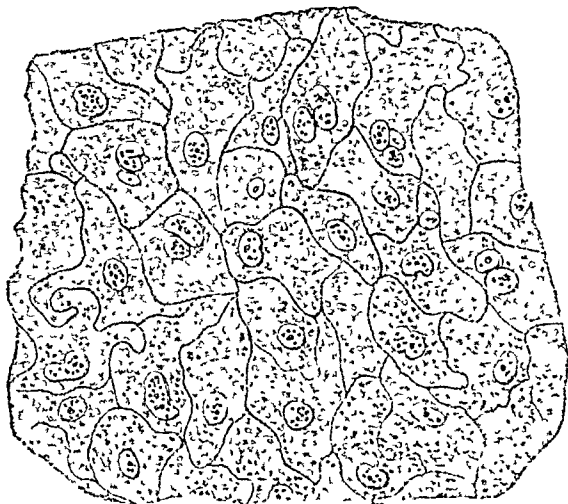
<sup>5</sup> The same.

dition, it was first necessary to become thoroughly acquainted with the elements of the normal pericardium; and in order to accomplish this, we began with healthy pericardia, both uncoloured, and coloured by gold and silver in the following manner.

The animal having been placed upon a stretcher, the pericardium was quickly dissected out, and by means of a glass rod immersed in a solution of silver 1:200 for twenty minutes, or in solution of gold-chloride 1:100 for twenty-five or thirty minutes, and then transferred to slightly acidulated distilled water and set in a warm and light part of the room. Upon the second day the pericardium was suspended in a solution of glycerin and water in equal parts, or in dilute alcohol. Pericardia were also coloured by silver injections into the abdominal vein and treated afterwards in the above-mentioned manner. From the fourth to the sixth day the membranes were properly coloured for examination.

The connective-tissue, lymph, and bloodvessels have been thoroughly described in the *résumé* by E. Klein in Stricker's "Handbuch," pages 621-624; but the paricardial endothelia do not seem to have received the careful study which they deserve; for there were found characteristics sufficiently marked to be diagnostic of their belonging to the outer or inner surfaces, namely, the external endothelia are very irregular in shape, vary very much in size, and possess, in addition to the large nuclei of

Fig. 1.



Frog. Internal Endothelia: Silver-tinted. Hartnack System, No. 10.

which each cell has one, small nuclei situated near the angles of the cells, varying from one to three in each cell.<sup>1</sup> The internal endothelia, on the

<sup>1</sup> The character of the outer endothelia is so like that given in the general description of peritoneal endothelia, that a representation of it was not considered necessary.

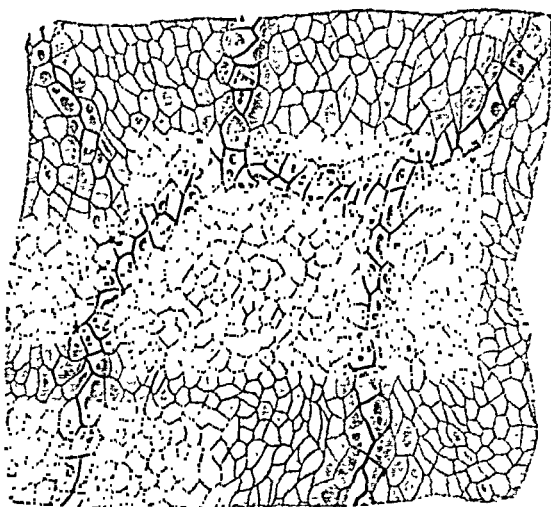


other hand, are of an almost uniform size and shape, while in general each cell has but one large nucleus.

The second peculiarity noted with regard to the endothelia was the following.

In not only the silver-injected but also in the silver-immersed pericardia of both the frog and toad, the endothelia of the external surface present a peculiarity which, examined by Hartnack system No. 4, may be described as dark-brown, irregularly-circular or curvilinear paths upon a light brown field, composed of deeply-tinted endothelial cells.

Fig. 2.



Frog. External Endothelia: Silver-tinted. Hartnack, No. 7.

In examining the connective-tissue lying immediately beneath, capillary vessels were found, following precisely the windings of the paths, like delicate sewerage pipes beneath a street, sometimes very near, sometimes at some distance from the surface, and varying in size in proportion to the depth of the tint.

The internal endothelia were of an uniform light-brown colour. Upon searching the tissue in its entire thickness, the vessels appeared to lie nearer the external than the internal surface.

A portion of the pericardium was therefore split in two, the resulting sections appearing to be of equal thickness, in the internal of which few vessels were to be seen, while in the external the number was very large.

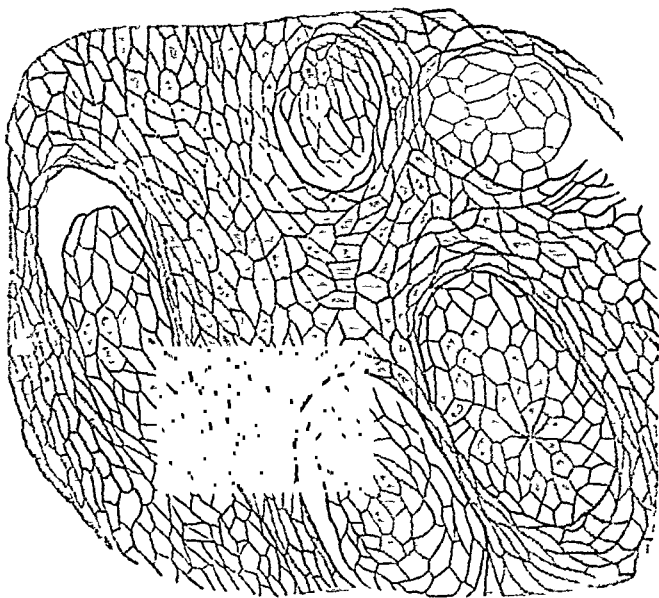
It was therefore supposed that a certain proximity of the vessel to the surface was necessary to produce this darker colouring.

It may be mentioned as a corollary, that in general young and active cells tint better in gold and silver solutions. It is therefore reasonable to

suppose that also in this case the darker-coloured cells are the more active parts of the endothelia; a supposition which, beyond this, is supported by an earlier discovery of Stricker, that, in the inflamed tissues, the energy of multiplication and division of cells is far superior in the tissues close to the vessels to that of cells at some distance from them. It has previously been mentioned that the silver-immersed pericardia were likewise coloured in this manner. As the vessels during the tinting process enjoy no longer their functions, we must look elsewhere for the cause of a corresponding appearance; and we find it in the greater activity of absorption of silver of some cells over others, and these cells therefore become the witnesses of the past life of the vessels.

The next observation made on the endothelia was this:—

Fig. 3.



Frog. External Endothelia: Silver-tinted. Hartnack, No 7.<sup>1</sup>

In the plate given above, the following will be noticed: The dark paths vary in form and size from a small and delicate circle to a large oval; the endothelia within these boundaries vary somewhat, also, in form and size; in the centre they are small, and quite regularly four-sided; the size increases and the form becomes more irregular from the centre toward the periphery, where they have the form of the fully developed cells. In all cases it was not possible to discover the capillaries beneath the paths.

Under the large oval and some of the small circular paths were they to be distinguished; but the capillaries were so delicate and so near the sur-

<sup>1</sup> This plate is not a perfect representation of the original specimen. The endothelia upon the borders of the light spots should be much darker than the intervening endothelia.

face as to be seen with the greatest difficulty, and in some cases, to be entirely marked by the dark surface-colouring.

It is however probable, since it is substantiated that the intensity of the tinting depends upon the proximity of a vessel, that wherever such deeper tinting can be recognized as circular or curvilinear, of a nearly uniform width, and united to other deeper tinted portions under which vessels are seen, a capillary vessel lies concealed beneath.

Under the above-mentioned supposition, that the darker tinted cells are of higher activity, the process of development may be in some connection with the arrangement of the dark spots, which are scattered over the field and composed of two or three cells of a darker shade than the general tint. At all events at a later stage, we are able to study what appears to be a process of development.

The smallest circles are composed of delicate, almost regularly four-sided, minute cells, uniformly deeply tinted; in the somewhat larger circles or ovals the cells are also larger, not so uniformly four-sided, and the central cells have lost to some extent, their deeper tint. Within still larger ovals, the cells are likewise larger, more irregular, and the deeper colouring has disappeared entirely from the central cells, and is confined to those forming the circumference of the oval. There are also larger areas (as in Fig. 2) circumscribed by the darkly tinted cells, but whose cells resemble the normal in size and shape.<sup>1</sup>

In support of the development of endothelia by division of old cells, may be mentioned Ludwig and Schweigger—Seidel, "*Arbeiten aus der Physiologischen Anstalt zu Leipzig vom Jahre, 1866,*" and E. Klein, "*Stricker's Handbuch,*" 620.

The third observation on the endothelia was the following: Gold-coloured specimens displayed upon the external surfaces closely-arranged ciliæ, whose length appeared to be greater than the thickness of the cells, giving to the surface the appearance of an unbroken, wavy field of grain. They were not found upon the internal endothelia, but upon the external of both the frog and the toad.

*The changes which take place during inflammation.*—The method of producing inflammation of the pericardium was the following: With a pair of scissors, an opening one inch in length was made, parallel, but to the right of the sternum; by means of an hook the skin was so drawn to the left side as to discover the residence of the heart; the end of the sternum was now gently raised, a cut sufficiently large to allow of the introduction of a thin stick of nitrate of silver was made through the peritoneal fascia; the silver was applied as delicately and for as short a moment as possible to the pericardial sac; the parts were allowed to resume their natural

<sup>1</sup> The plate does not give a sufficiently extensive view for the observation of all these changes.

positions, and the wound in the skin was sewed up. In the earliest of these studies the silver-stick was held in contact with the pericardium several seconds, but it was found that the inflammation following the operation was too severe to allow of the animal's living more than forty-eight hours. The post-mortem examination showed the pericardial sac to be enormously distended by lymph, containing granulations and pus-cells in large quantities; the endothelia of both surfaces had disappeared, their place being occupied by a thick layer of pus-cells, and the connective tissue was so infiltrated with pus as to be scarcely recognizable; the heart tissue had undergone a like change, and both the heart and its envelope were so disintegrated as to be easily broken to pieces. A physical examination of pericardia upon the fifth and sixth days of the less severe inflammatory process, gave the following results: The membrane was likewise greatly distended by lymph which contained but few granulations and pus-cells, was thick, opaque, of a spongy feel, and with pressure exuded infiltrated lymph. With slight force it could be split in two, and in one case an extensive hemorrhage had taken place within the tissue, completely dissecting it into halves. A microscopical examination of the surfaces thus laid bare (the specimen was colored in gold-solution and first cleansed of coagulated blood by means of a delicate India rubber dipped in glycerin) disclosed fine networks of nerves and vessels, lying immediately on the surface and connected to others, running through the tissue in its entire thickness and permeating it by similar networks in every direction.

Connections by false membrane were found between the heart on the one side and the pleural fascia on the other, to the inflamed pericardium. The process had extended to the heart, with the results already known to take place in inflammation of the heart-substance.

We now turn to a description of the minute microscopical examinations.

The specimens used for these examinations were of from one to six days' inflammation. The drawings were taken from gold-coloured specimens from the pericardia of toads, because the endothelia of this membrane are somewhat larger in the toad than in the frog; and, although the inflammatory changes are similar, in the former the specimens for drawings are better. The first change which was noticed is this: All cell elements of the tissue

Fig. 4.



Toad. Profile view of Normal Endothelia: in folded specimen: Gold-tinted: Hartnack, No. 10

become, as it were, hypertrophied; the endothelia and their nuclei retain their contours but grow in area and thickness; the connective-tissue cells

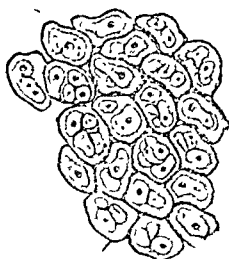
enlarge; the vessels and nerves are more readily found than in the normal tissue; and the ciliæ upon the outer endothelia have increased in length

Fig. 5.



Toad. Profile view of Endothelia 21 hours inflamed: in folded specimen: Gold-tinted: Hartnack, No. 10.

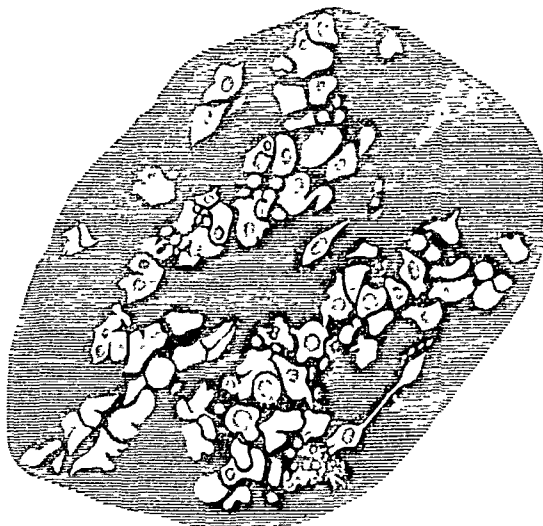
Fig. 6.



Toad. 2 days inflamed outer endothelia: Gold-tinted: Hartnack, No. 10.

and calibre. Upon the second day the changes are more marked: the endothelia of either surface begin to develop each in its own particular manner toward the formation of new membrane, as will be seen at a more highly developed stage; the nuclei of the outer endothelia split up, while the cells show also the tendency to divide; the nuclei of the internal endothelia proliferate by a more uniform division, enlarge and separate from one another; at the same time the cells have been changing their forms, by amœboid movements, so that every variety of cell may be seen at once.

Fig. 7.



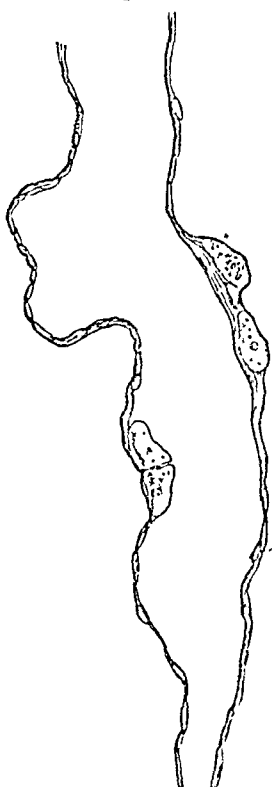
Frog. Silver-tinted: 2 days inflamed: Internal Endothelia: Hartnack, No. 7.

The connective-tissue cells elongate and their nuclei divide. The investigations do not prove the growth of new vessels and nerves; but that

those existing are so far influenced by the activity of the other elements of the tissue as to increase in size, is proved by the fact that, while in the normal pericardium they must be searched for, in the inflamed every turn of the fine adjuster discloses intricate networks. These transformations proceeded regularly from the second day, so that upon the sixth day the following observations were made.

Through the ground-substance, which was multiplied to many times its normal thickness, were scattered free cells of different shapes, resembling pus, the transformed nuclei of connective-tissue cells, and stellate and elongate cells. Here and there were found slight hemorrhages and granulations. As to the nerves, the appearances were strongly though indirectly in support of the belief that a new growth was taking place; for, first, their visibleness had become much more noticeable than in the specimens of two days' inflammation previously described; and secondly, the nerves no longer retained their gradually curving lines, but were bent in innumerable angles, as if they had increased in length but were not per-

Fig. 8.



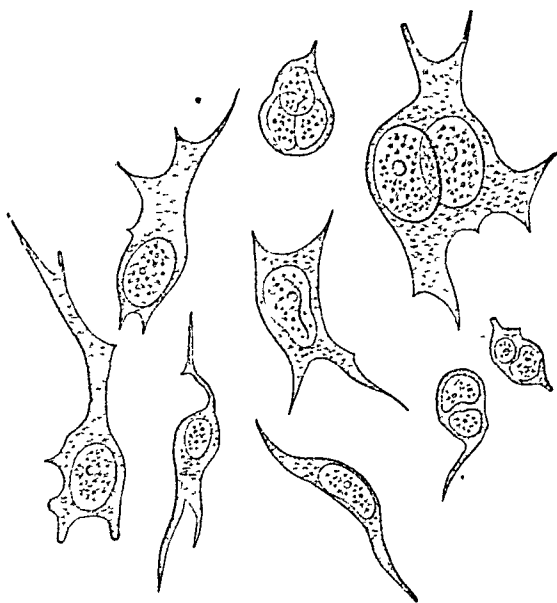
Gold-tinted: 6 days inflamed: nerves: Hartnack, No. 10.

mitted by the adjoining tissues to extend themselves; and thirdly, the enlargements which are seen from place to place upon the normal nerves, were no longer oval in shape and of a diameter not greater than twice

the diameter of the nerve cylinder, but were observed to protrude hernia-like, sometimes on one, sometimes on both sides, of a diameter many times that of the normal bulbs, and from the larger of these could be traced delicate filaments whose terminations lost themselves in the connective tissue adjoining. The connective-tissue cells which likewise took on this peculiar filamentous growth seemed to be in connection with the nerve processes just described, although it could not be established beyond a doubt; and fourthly, the nucleated enlargements of the nerves which in the normal condition are quite small and single, were much enlarged and the nuclei were, in some cases, undergoing the process of division, and in others, already divided into two or more parts; and lastly, in juxtaposition with the under surfaces of the transformed endothelia were numerous networks of exceedingly fine, almost straight nerve fibres.

The bloodvessels were not sufficiently studied to warrant a description. The most interesting changes had taken place upon the two principal surfaces. I have previously mentioned that the inflamed membrane was much thickened; and that this was due to the increase of the connective-tissue cells, to the enlargement if not formation of nerves and vessels, and to the infiltrated lymph; but the endothelia aid also, although to a

Fig. 9.



Toad. Internal Endothelia, 6 days inflamed: various forms and sizes of cells: Gold-tinted: Hartnack, No. 10.

much less degree, in producing this thickness; for upon each surface were found several planes of cells. The process, beginning on the second

day, has continued in the following manner. Upon the outer surface, the endothelia, which we have seen splitting up and their nuclei dividing, possess no longer their normal outlines, but are transformed into elongate or spindle-shaped cells. Upon the inner surface, the change is even more marked. The amœboid-like endothelia of two days' inflammation have divided into innumerable cells of extremely various forms; namely, round or oval, stellate or elongate, spindle- or bulbous-shaped cells; and of very different sizes, varying from the size of pus-cells to cells several times the size of normal internal endothelia. Their nuclei are round or oval, but vary likewise in size, occupying sometimes a small portion, at others the greater part of the cells.

The more advanced stage of the process is this. The spindle-shaped cells of the external surface unite with one another, arrange themselves in rows, and form thus a compact new membrane.

Fig. 10.



[Toad. External Endothelia: 6 days inflamed: False Membrane: Gold-tinted: Hartnack, No. 10.

The process upon the inner surface is somewhat different. Each cell throws out delicate filaments, whose directions accommodate themselves to

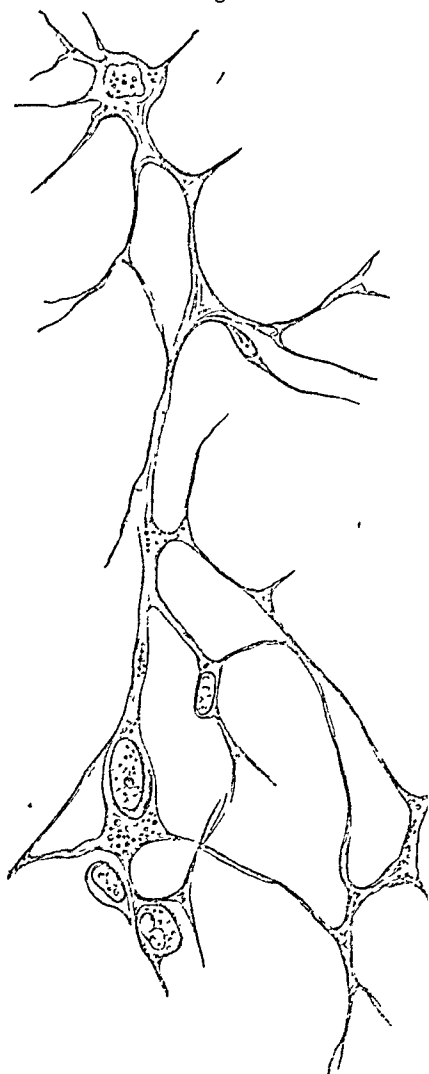


the situation of the cells so as to unite with like filaments from neighbouring cells and thus to form a new network of fibres and a new connective tissue.

Fig. 11.



Fig. 12.



Toad. Internal Endothelia: 6 days inflamed: False Membrane: Gold-tinted; Hartnack, No. 10.

The same: later stage.

The results of the investigations upon the inflamed pericardium are in short the following:—

- 1st. All cell elements of a tissue, during inflammation, multiply.
- 2d. New formation takes place, first, of cells; second, of connective tissue (false membrane); and, third, most probably of nerves.

ART. II.—*On Thrombosis and Embolism.* By JOHN A. LIDELL, M.D.,  
of New York.

THE blood oftentimes spontaneously coagulates in the vessels during life; the coagula thus formed are called thrombi, and the process which forms them thrombosis. The term *thrombosis* then signifies, that some part of the vascular system is obstructed (more or less completely) with blood-clot, or with some morbid product derived from blood-clot, which has been spontaneously developed at the place of obstruction. The word *thrombus* represents the obstacle itself, and *thrombosis* the process by which the obstacle, *i. e.* the coagulum, is originally formed, and through which it may afterwards, according to circumstances, be removed (absorbed), or become inert (organized), or be destroyed (disintegrated).

One variety of thrombosis, namely, that which occurs in the peripheral veins, is synonymous with the disorder which was called *phlebitis* by John Hunter, Cruveilhier, Carswell, Hasse, and by pathologists generally twenty years ago. They supposed it to be inflammatory in its nature, and that the coagulation of the blood directly resulted from inflammation of the lining membrane of the affected veins. According to their views, the term *phlebitis* was appropriately applied to this affection. But clinical experience and post-mortem research have now shown that their hypothesis is untenable. On this point Virchow justly remarks: "We do not know that inflammation, as such, has any necessary connection with coagula; on the contrary, it has turned out that the doctrine of stasis rests upon manifold misinterpretations. Inflammation may unquestionably exist when the current of blood within the vessel of the affected part is perfectly free and unobstructed. If we therefore leave inflammation on one side, and confine our attention simply to the coagulation of the blood, to the formation of the clot (*thrombus*), it seems most convenient to comprehend the whole of this process under the term *thrombosis*. I have [says Virchow] proposed to substitute this term for the different names *phlebitis*, *arteritis*, etc., inasmuch as the affection essentially consists in a real coagulation of the blood [during life] at a certain fixed point." (*Lectures on Cellular Pathology*, pp. 232, 233, Am. ed.) Clinical experience and post-mortem research have abundantly shown that the disorder which was formerly thought to essentially consist in an inflammation of the vein-wall (*phlebitis*) is in reality not inflammatory in its nature, and therefore we find that the term *false phlebitis* is now sometimes applied to cases of *thrombosis*. It appears now to be pretty generally admitted, 1st, that *thrombosis* has no necessary connection with the vascular inflammations, or, rather, that, in at least a very large proportion of the cases where it occurs, there is no corresponding inflammation of the vessel affected by it; 2d, that it may occur in any part of the circulatory apparatus—in the veins, in the

arteries, and in the heart itself; and, 3d, that it occurs with very much greater frequency in the veins than in the arteries.

*Embolism*, however, must not be confounded with thrombosis. It signifies that some bloodvessel is obstructed by an embolus or plug, which has been brought in the blood-stream from some more or less distant point where its formation occurred. Embolism bears a slight resemblance to thrombosis in one respect, namely, in it also the calibre of the affected vessel is obstructed, and more or less completely stopped up, but they do not agree in any other particular. For example, in thrombosis the occluding coagulum is always formed from the blood at the seat of obstruction; in embolism the occluding plug is carried, in the blood already formed, to the place of obstruction, usually from some considerable distance. Thrombosis occurs for the most part in the veins; embolism in the arteries. In embolism the plug often consists not of blood-clot, but of a so-called vegetation or concretion of fibrin which has been washed off from the valves of the heart, or from the endocardium, and carried forward by the arterial current until the vessels become too small in calibre to allow it to advance any further, as was first shown by Virchow in Germany, and by the late Dr. Kirkes in England; or, the embolus may consist of a fragment of a cardiac valve, or of the endocardium, which becomes detached when these parts are the seat of ulcerative inflammation, as was also first shown by the late Dr. Kirkes. Again, embolism of the main artery not unfrequently occasions gangrene in the extremities; thrombosis of the corresponding vein almost never leads to such a result. Embolism of the internal carotid artery, and its branches, often causes softening of the brain; thrombosis of the internal jugular vein and its tributaries never produces this lesion.<sup>1</sup>

Embolia, however, not unfrequently have their origin also in the softening, breaking down, and detachment of venous thrombi. This circumstance was originally pointed out by Virchow, and its occurrence constitutes the only real bond which exists between primary thrombosis and embolism. A thrombus often constitutes the source from which many embolia simultaneously spring, but in order to perform this office it must first break into numerous pieces which become separated from each other, or detached, and then float away in the current of the circulating blood. Thus, thrombosis occurring in the peripheral veins not unfrequently leads to embolism of the pulmonary artery and its branches. But thrombosis constitutes only one of several sources from which embolia are known to proceed, and, even in the cases where thrombosis is followed by embolism, the first-named

<sup>1</sup> But thrombosis of the cerebral arteries sometimes occasions cerebral softening, and thrombosis of the femoral artery sometimes produces gangrene of the foot and leg. These exceptions to the general statement presented in the text will, however, be duly noticed when we come to speak on cerebral thrombosis, and on arterial thrombosis of the extremities.

process usually ends where the latter begins. Embolism may, however, induce a *secondary thrombus* to form at and beyond the place where the embolus lodges, in the blood which stagnates there, as will be more fully shown in the sequel; but this proceeding is quite distinct from the formation of an original coagulum, or what may with propriety be called a primary thrombosis.

Virchow's proposition to employ the term thrombosis instead of phlebitis, in all cases where the blood spontaneously coagulates in the veins during life, has proved acceptable to pathologists throughout the world. The term phlebitis is now but seldom used, as compared with twenty years ago, and its employment has become restricted to the cases in which the vein-walls are positively the seat of an inflammatory process, and not simply stained by contact with decomposing blood. So far as the spontaneous formation of coagula in the peripheral veins, in the pulmonary artery, and in the heart itself, during life, is concerned, thrombosis is usually employed to designate the disorder generally, and the term phlebitis, when used in connection with it, is considered to be applicable only to a comparatively rare variety or species of peripheral thrombosis, in which the walls of the affected veins are found to be really inflamed, and in which the inflammatory process may possibly sustain a relation to the blood-clots of cause and effect. The writer infers from his own experience, as well as from the observations of others, that the number of cases in which thrombosis is associated with primary or pre-existing inflammation of the obstructed vessels is relatively very small. He needs here only to mention how frequently thrombosis of the heart and pulmonary artery occurs in the last stage of many exhausting disorders, and how very seldom it is accompanied by inflammation of the membrane which lines these organs. The term *primary* inflammation is employed above, because it is not improbable that a *secondary* inflammation may, under favourable circumstances, be kindled in the wells of a thrombosed vein, just as we sometimes see the connective tissue become inflamed and suppurate around blood-clots in other parts of the body, especially in unhealthy subjects. In such cases the thrombosis is obviously the primary, and the phlebitis the secondary, or induced disorder. A case will be related in which secondary phlebitis occurred.

For convenience of description and reference the *Varieties of Thrombosis* may be arranged in several groups or classes. Thus we have *three distinct groups*:—

1. That which occurs in the veins, or *venous* thrombosis;
2. That which occurs in the arteries, or *arterial* thrombosis;
3. That which occurs in the heart, or *cardiac* thrombosis.

Again, but two groups are sometimes used for classifying the cases of thrombosis. The first embraces those in which the heart itself, or the great vessels connected with the heart, are obstructed with ante-mortem coagula, and is called *central* thrombosis; the second embraces those in

which the peripheral veins or the peripheral arteries are obstructed during life with blood-clots developed at the place of obstruction, and is called *peripheral* thrombosis. We shall substantially adopt this classification in the following pages.

Finally, this disorder is called *cerebral* thrombosis when it involves the bloodvessels of the brain or its membranes, *pulmonary* thrombosis when it affects the bloodvessels of the lungs, *portal* thrombosis when it attacks the portal vein, *renal* thrombosis when it involves the bloodvessels of the kidneys, and *crural* thrombosis when it affects the bloodvessels of the thigh, etc.

But thrombosis, notwithstanding the number of its varieties, is a disorder which possesses very great importance for the practising physician, as well as for the medical philosopher; because it embraces almost all the cases which used to be described under the head of phlebitis, together with a very large share of the accidents which occur to women after childbirth, and a considerable proportion of the cases in general in which death suddenly occurs;<sup>1</sup> besides, it is by producing thrombosis of the heart and pulmonary artery that chronic diseases, such as tuberculosis, carcinoma, chronic diarrhœa, and other disorders which are attended with much marasmus, finally occasion death, in very many instances. It is also probable that both thrombosis and embolism play a much more important part in the history of disease than is generally supposed, and that they are destined to receive much more attention from the pathologist in the near future than is generally believed. This subject, therefore, demands from us careful study and profound attention.

1. *Central Thrombosis*.—The spontaneous formation of coagula in the right chambers of the heart and in the pulmonary artery not unfrequently leads to sudden death. The following case affords a striking example:—

CASE I. *Death suddenly produced by thrombosis of the heart and embolism of the pulmonary artery; autopsy*.—S. W., aged 24, a married woman much addicted to drink, who had been separated from her husband for the last five months on account of their intemperate habits, as it was said, died suddenly on Saturday, Nov. 20, at 2 o'clock in the morning. On the previous Wednesday she came to the city from the country, whither she had gone some days before in order to live at service. On the evening of Thursday, the 18th, she came home, saying that she had taken laudanum

<sup>1</sup> In 580 cases of sudden death Ogston found that thrombosis of the heart and large vessels connected with it was present in 63, or 10.8 per cent. of them, although the thrombosis constituted the cause of death in only 14 instances. (Vide Ogston on *Sudden Death*, in *British and Foreign Med. Chirug. Review*, vol. xlv., 1869, p. 475.)

In cases where death does not occur suddenly, however, thrombosis of the heart and great vessels attached to that organ constitutes an extremely frequent mode of departing from this world.

(six cents' worth) for the purpose of killing herself; but her friends supposed her to be jesting, as she was much the worse for liquor at the time. Soon afterwards she sank into a deep sleep, from which, however, she awakened of her own accord about midnight, and had an attack of vomiting. This sleep was, doubtless, produced not by the opium, but by the drink which she had taken. During the next day, Friday, the 19th, she seemed to be very sick, and vomited a good deal, complaining also of thirst and pain in the stomach. About 1 o'clock that night she had an attack of epileptiform convulsions, after which she recovered her senses again, and asked for drink (water). It was given to her, and then she was suddenly seized with great difficulty of breathing. She rapidly grew worse, and died at 2 o'clock, as stated above, of apnœa.

*Autopsy by the author, for the coroner, thirty-three hours after death.*—Decomposition has commenced. Adipose tissue abundant beneath the skin and in the omentum. Right pleural cavity glued up by old adhesions. Right lung strongly congested and œdematous. Left lung intensely congested. Left pulmonary artery obstructed with coagula. Heart enlarged, fatty externally, flabby, and its apex rounded off; its cavities are dilated, and those of the right side are filled with dark-coloured clotted blood. Foramen ovale closed. Liver enlarged, its edges being blunt or rounded off; its whole surface, both superior and inferior, is covered with dense swathes of old false membrane by means of which it adheres or is bound to the adjacent organs and parts; the surface of an hepatic section, however, presents a normal appearance. Transverse colon bound to anterior wall of abdomen by old adhesions. Stomach large; it contains three or four ounces of liquid having a dark-greenish colour; its mucous membrane is mamillated and softened, but pale in colour. Spleen natural. Left kidney congested. Did not examine the right one. Pupils dilated. Did not open the head. The examination was necessarily hurried and curtailed from want of time.

*Comments.*—This woman, while recovering from a debauch, was suddenly attacked with dyspnœa. It rapidly increased in severity, and in about half an hour she died, this being the only symptom of importance that was observed in connection with the fatal issue. At the autopsy the right chambers of her heart were found to be full of dark-coloured blood-clot, the pulmonary artery extensively obstructed with dark-coloured coagula, and the pulmonary tissue intensely congested. It is probable that thrombi were formed in the right side of the heart, especially in the right auricle, during the temporary stasis of blood in this side of her heart which attended the epileptiform convulsions. It is also probable that some of these coagula became detached when she rose up in bed to take the drink of water, and, floating away in the blood-stream into the pulmonary artery, quickly obstructed the branches of that vessel to great extent. Dyspnœa then suddenly occurred, because the flow of blood into the pulmonary capillaries was suddenly arrested in great measure, and the function of the lungs was suddenly suspended to corresponding extent. Thus the difficulty of breathing, together with the fatal issue, clearly appears to have been due to embolism of the pulmonary artery, and the embolism itself to have resulted from thrombosis of the heart.

The congested condition of the lungs was also produced by the embolism of the pulmonary artery. The blood stagnated in the pulmonary vessels beyond the occluding clots, and thus a more or less complete state of pulmonary infarction was produced to corresponding extent. For, as Ludwig has shown, we must not infer when the calibre of an artery is incompletely obstructed or constricted that "the contents of its capillaries are lessened, and that the parts which they traverse grow paler. The sluggishness of the stream thus produced in the capillaries rather has the effect of allowing the heavy blood-corpuscles to collect and become crowded together; now, as two or more blood-corpuscles, if brought into contact, are apt to become permanently adherent, the blood itself can form a plug capable of closing the capillaries. Such an occurrence, which converts the capillaries into blind appendices to the artery, must cause an increase in the internal pressure" with dilatation of their calibre and a state of hyperæmia, attended not unfrequently with rupture of their walls and extravasation of blood.

Again, Trousseau, while speaking of rheumatic apoplexy, says:—

"A coagulum may form in the cardiac veins, in the right heart, or the pulmonary artery, as a result of that remarkable tendency to spontaneous coagulation which the blood evinces in rheumatism, and this thrombosis will bring on asphyxia, which will carry off the patient rapidly, if not suddenly, in a state of stupour which may be erroneously regarded as cerebral." (*Vide Trousseau's Lectures on Clinical Medicine*, vol. i. p. 522. *New Sydenham Soc. Trans.*)

Hasse mentions a case which probably belongs to this category.

The victim was a robust youth at the Leipsic Hospital, who, after taking severe cold, became seized with wandering pains and with a fixed and deep-seated pain in the sacral region. Violent dyspnoea ensued, and he died very shortly afterwards. On dissection, nothing was discovered except inflammation (thrombosis) of both hypogastric veins, which were blocked up with solid, adherent, and stratiform fibrinous plugs; *similar formations were found in the branches of the pulmonary artery of the right side.* (*Vide Hasse's Pathological Anatomy*, pp. 39, 40, note, American ed., 1846.)

Dr. Druitt has recorded another case belonging to this category.

The patient, a male, aged 42, had had symptoms of subacute rheumatism, with some œdema latterly of both hands and feet. The usual obstruction symptoms supervened suddenly. At the autopsy a venous clot or cast, twenty inches long, was found in the right auricle and ventricle of the heart. It was tubular, firm, pale, and lay coiled up and partly surrounded with soft fresh fibrin. The right and left pulmonary artery and their leading branches also contained soft, loose fibrinous plugs. (*Vide New Sydenham Soc. Year-Book*, 1862, p. 116; also *Med. Times and Gaz.*, July 19, 1862.)

Dr. Playfair has also reported a case in which thrombosis of the right heart and pulmonary artery, with sudden death, occurred in a subject who was thought to be rheumatic.

A girl, aged 19, apparently healthy, employed as a nurse at King's College Hospital, on March 15, complained of rheumatic pain in her right knee-joint, which was, however, neither swollen nor tender on pressure, and there was no general feverishness. No other joint was affected. An alkaline mixture was prescribed, and she was recommended to remain in bed to give rest to the joint. On the next day she was not seen, but the nurses who slept in the same room reported that she had been cheerful and well all day, and had scarcely complained of pain. On the following morning, the third from the first appearance of the pain, she awoke about six o'clock, and entered into conversation with her companions, saying that she had passed a good night and was free from pain. Shortly after this she complained of feeling weak, and asked for the bed-pan to be given to her that she might pass water without getting out of bed. This was done, and immediately afterwards her rapid and hurried breathing attracted attention. The house-physician was at once sent for, but before he arrived she was dead.

"On post-mortem examination all the organs and structures of the body were found to be healthy. There were no clots in any of the peripheral veins. In the right side of the heart, and in both pulmonary arteries, there was a firm, solid clot of decolourized fibrine, of a pale yellow colour, which was adherent to the valves and fleshy columns of the heart, but not to the walls of the arteries themselves. This coagulum extended into the smaller, but not into the most minute ramifications of the arteries." Dr. Playfair remarks: "It seems to me probable that in this instance the coagulum had [been] formed for a considerable period before death; probably it had been forming during the night preceding the fatal result. As long as the patient remained quiet sufficient blood passed through the obstructed vessels to carry on the animal functions, and no discomfort was felt. When, however, she was obliged to exert herself, there was a sudden call for blood, which could not be supplied through the occluded arteries, and the fatal result took place." (*Vide Trans. Patholog. Soc. London*, vol. xviii., 1867, pp. 68-70.)

Roget (*Gaz. des Hôp.*, 1869, 220) gives the history of a healthy little girl, aged 5, who suffered from acute rheumatic fever, without heart affection, but who died in the second of two attacks of severe dyspnœa occurring in one day; the only thing found to account for death was a very large, hard, fibrinous, recent clot, which filled up the right auricle and ventricle of the heart, and stopped up the orifice of the pulmonary artery. Another, but smaller, clot was contained in the left chambers of the heart. (*Vide New Sydenham Soc. Retrospect*, 1869-70, p. 98.)

The so-called metastasis of gout and rheumatism to the heart, in the writer's opinion, consists sometimes (and perhaps not unfrequently) in the occurrence of cardiac and pulmonary or central thrombosis. It is in such cases, probably, that the practice of drinking deeply in order to protect the heart from gout, as recommended by country squires of the old school, has sometimes seemed to prove useful.

Puerperal women are especially prone to the occurrence of thrombosis in the right side of the heart and pulmonary artery. When this accident happens, the patient is suddenly seized with faintness, irregular action of the heart, difficult breathing, rapidly increasing collapse; and death usually soon ensues. Not unfrequently the patient complains only of sudden dizziness and faintness, gasps for breath, and quickly dies. On making an



autopsy, the right chambers of the heart and the pulmonary artery are found to be obstructed with ante-mortem clots. Dr. Barnes has collected fourteen fatal cases. (*Vide Obstetrical Transactions*, vol. iv. pp. 44-47.) To these Dr. Playfair has added eleven others. (*Vide Transact. Patholog. Soc. of London*, vol. xviii., 1867, pp. 71-73.) Thus we have in all twenty-five fatal cases of central thrombosis occurring in puerperal women, in which accurate post-mortem examinations were made.

On analyzing these cases we find that the occluding clots may be divided into two classes, namely: 1st. *genuine thrombi*, or those which were formed on the spot by spontaneous coagulation of the blood; and 2d, *embolia*, or those which were originally formed in the peripheral veins and migrated from thence to the heart or pulmonary artery, where they generally induced a secondary thrombosis. Dr. Playfair says:—

“In seven out of these twenty-five cases there was clear evidence of true embolism, and in them the death occurred at a remote period after delivery; in none of them before the nineteenth day. This contrasts remarkably with the cases in which the post-mortem signs showed that no true embolism could have occurred. These amounted to fifteen out of the twenty-five, and in all of them, with but one exception, the death occurred before the fourteenth day; often on the second or third. The reason seems to be that in both classes of cases the coagulation of the blood was caused by a similar blood dyscrasia, due to the puerperal state. In true embolism, however, the dyscrasia first caused coagulation in the peripheral veins, and it was not until changes had taken place in the clots so formed, generally in the way of fatty degeneration, that portions of them became separated and carried to the pulmonary arteries, there to cause the fatal obstruction. In primary thrombosis of the pulmonary arteries, however, the same altered condition of the blood which induced clotting in the peripheral veins in the former class of cases here caused it first in the pulmonary arteries, so that death ensued at a much earlier period after delivery, and at a time corresponding to the peripheral thrombosis in cases of true embolism.” (p. 70.)

But recovery sometimes takes place, even when the pulmonary artery is seriously obstructed with coagula. Dr. Playfair relates three cases, occurring under his own observation, which do not seem explicable on any other hypothesis.

Dr. Playfair's investigations have led him to adopt the following conclusions:—

“1. Obstruction of the pulmonary artery after delivery may depend either on embolism or on spontaneous thrombosis.

“2. The former usually occurs at a much later period after delivery than the latter; and spontaneous thrombosis probably corresponds with, and is due to some cause similar in its nature to, that which produces the obstruction of the peripheral veins in true cases of embolism.

“3. Both thrombosis and embolism are much more common in patients who are anæmic and weak, either from hemorrhage or other cause.

“4. It is probable that obstruction of the pulmonary artery sometimes occurs without proving fatal.

“5. The main element in the treatment of such cases is the most rigid rest, and a nourishing supporting regimen.

“6. As far as present statistics go, thrombosis and embolism seem more common in primiparæ than in multiparæ.” (*Vide Braithwaite's Retrospect*, part lvi. 1868, pp. 234-238; also *Lancet*, July 27 and Aug. 10, 1867, pp. 94, 153.)

One of Dr. Playfair's cases of central thrombosis, which ended in recovery, presented the following symptoms:—

"Thirty hours after delivery the patient complained of great weakness. On the third day a sudden fright was followed by syncope, then by intense dyspnœa; pulse very feeble, respiration 40, lungs clear. Immediately over the site of the pulmonary artery was a distinct, harsh, rasping murmur, confined to a very limited space. Heart-sounds feeble and tumultuous. The existence of coagulum in the right heart was clear. Dr. Playfair thinks that the possibility of such a condition existing without proving fatal had not previously been suggested." (Vide *New Sydenham Soc. Retrospect*, 1867-8, pp. 415, 416.)

Dr. Playfair has also related a very interesting case of embolism and secondary thrombosis of the pulmonary artery in the *British Medical Journal* for 1869.

J. W., aged twenty-one, six months pregnant, was operated upon for fissure of the rectum on the 5th of December. On the 13th the pulse and temperature rose, and the respiration increased to 40. Labour-pains set in, and the child was expelled next day. "Extreme dyspnœa, countenance excessively pale, face expressing extreme anxiety. No pulse at wrist, nor at the posterior tibial artery. Sounds of heart almost *nil*." She called incessantly for air, and said she was being suffocated. She died at 7.45 A.M. and during the last few seconds her face was convulsed. *Autopsy*: Lungs quite healthy; heart healthy, its right side extremely distended, also the large veins of the neck and the two cavæ; left ventricle small, pulmonary veins nearly empty. At the bifurcation of the pulmonary artery plugs of firm fibrin were found obstructing the passage of the blood. In the centre of these plugs was a piece of fibrin the size of an almond, at the base of which was an irregular surface that fitted closely to a corresponding rough surface in a clot of the iliac vein. This was the origin of the embolus. (Vide *New Sydenham Soc. Retrospect*, 1869-70, pp. 395-396.)

In this case the lodgement of an embolus in the pulmonary artery appears to have been attended with the formation of coagula by which it was enveloped—that is, a secondary thrombosis was induced.

For the purpose of illustrating still further the subject of embolism of the pulmonary artery we will present the following observation from Niemeyer. He says:—

"Within the last two years I have seen two cases in which death occurred in a few hours, with all the signs of extreme dyspnœa and collapse, and in which it was found post-mortem that a large thrombus had been detached from the femoral vein, had passed into the circulation, and, by obstructing the main branch of the pulmonary artery, had occasioned this peculiar kind of suffocation." (Vide *Text-Book of Practical Medicine*, vol. i. p. 412, first Am. ed.)

Prof. Malmsten, of Stockholm, related to the Society of Swedish Physicians, 1867 (*Journ. f. Kinderk.*, 1869), a case of sudden death during pleurisy from thrombosis of the pulmonary artery.

Apparently recovering from pleurisy, the patient went out, and on coming in was suddenly seized with great dyspnœa and severe palpitation. Respiration exceeded 40 in the minute; the heart-beat was so strong that the chest-wall was shaken by it. On auscultation there was heard over the right lung a clear but very strong respiration rush; over the left lung it was blowing. The patient became paler, the face and lips assumed a livid colour, a cold sweat broke out over the forehead, and in ten minutes death followed. The patient was conscious to the last moment. *Autopsy*: The veins of the dura and pia mater were very full. On opening the chest the right lung collapsed normally. There were recent adhesions of the left lung below, and about two pounds of serum in

the pleura compressed the upper part. No blood in the heart, the right side contracted and containing no trace of fibrin or coagulum. The heart was of normal size and structure. At the origin of the right pulmonary artery was a coagulum which quite filled the vessel; it was dark-coloured, and stretched into all the principal branches. There were no thrombi in the left pulmonary artery. (Vide *New Syd. Soc. Retrospect*, 1867-8, p. 432.)

CASE II. *Membranous croup occurring in a child of four years and six months; sudden death due in all probability to thrombosis of the right side of the heart and embolism of the pulmonary artery; no autopsy.*—H. M. H., a healthy-looking little girl, aged  $4\frac{1}{2}$  years, had a mild attack of scarlatina in December, 1870, and January, 1871, but made a good recovery.

On the afternoon of February 28, I was again brought to see her in great haste, and found that she had membranous croup. She had already been ill some four or five days, and the nature of her case was unmistakable. The singular cough and voice, "*vox instar cantus galli*," and the laryngeal breathing, which characterize this disease, were all present in a high degree. Besides, some false membrane could be perceived on looking into her throat. The dyspnœa which resulted from the obstruction of her larynx was excessive, by spells, and threatened immediate suffocation. Her skin was warmer than natural, and her pulse strong.

Before resorting to tracheotomy I resolved to test the solvent power of lime-water on the false membrane, and, accordingly, began this treatment as soon as I could bring an atomizing apparatus from home, which was about a half mile distant. The lime-water was applied to the fauces, larynx, etc., in the form of spray with one of Codman and Shurtleff's instruments (No. 5) for six or eight minutes at a time, and at intervals of every half hour or hour till late that night. Its use was attended with much relief to the symptoms; and the little patient slept naturally during the latter part of the night.

March 1, 8 A. M. The croupal symptoms returned and the lime-water spray was again resorted to. Its administration was continued through the day at intervals of every hour or two, and the disease in her larynx and trachea clearly seemed to be yielding to this treatment. The voice and cough-sounds decidedly improved, the latter became moist or loose, and the dyspnœa grew gradually less urgent through the day, and before nightfall disappeared. At 6 o'clock P. M., when I went to dinner, her breathing was quite easy or natural, and I began to entertain some hopes of her recovery.

At 7 o'clock P. M., when I returned, I found, however, that a great change for the worse had occurred. She again had very urgent dyspnœa, but it was of an entirely new character. There were no abnormal sounds now issuing from her throat, nor any other evidences of obstruction in her larynx. Still the little patient was striving with all her might to draw air into her lungs. Even the muscles which are only indirectly concerned in performing the respiratory movements, such for example, as those of the neck, arms, abdomen, etc., were brought into full play. Her face was congested, her lips blue, her eyes widely open, her nostrils expanded and working strongly, her skin bedewed with sweat, her pulse frequent and small. Her heart was beating in a tumultuous manner, and its sounds appeared indistinct, but I could not detect anything else abnormal. The respiratory murmurs were rather louder than natural, but otherwise unaltered and heard all over the chest. The larynx was so free from ob-

struction at this time that the attendants and friends of the little patient at once remarked that the difficulty was no longer seated in her throat. Moreover, this new and terrible form of dyspnœa had come on suddenly while I was away at dinner, as mentioned above. *Diagnosis*: this fresh attack of dyspnœa was not due to obstruction of the larynx, trachea, and bronchia, nor to condensation of the pulmonary substance, nor to effusion in the pleural cavities, and we therefore inferred that it was occasioned by a want of blood in the pulmonary capillaries, or, in other words, that it resulted from some obstruction to the flow of blood from the right side of the heart through the pulmonary artery and its branches to the lungs. We thought the pulmonary artery was extensively obstructed with coagula detached or extending from the right chambers of her heart. The real difficulty was therefore a thrombosis of the heart which had occurred in consequence of the attack of croup. I told the parents what accident had happened, and that the case was beyond the help of art. She sank and died at 2 o'clock A. M., March 2d, about seven hours after the pulmonary embolism occurred. Some time before death her countenance became very pale and her lips purple at their margin (*i. e.*, mucous border) and remained so to the end. No autopsy was allowed.

*Comments.*—On inquiry, I was not surprised to find that the same accident has been observed by other practitioners who have been called upon to treat membranous croup. The late Dr. Tanner, writing on the subject of thrombosis and embolism, and obviously having the functional disturbance of the heart and pulmonary artery, which they may produce, in full view, remarks: "With regard to croup, for example, my own experience would lead me to believe that death is much more frequently due to thrombi than to simple asphyxia." (*Vide Practice of Medicine*, pp. 61, 62, Am. ed., 1870.) In another place, while speaking of membranous croup, he also says:—

"In a large number of the unfavourable cases death seems to take place from asphyxia, while in some instances it certainly appears due to a deposit of fibrin in the heart. After death from acute croup, Dr. Richardson has more than once found the cavity of the right auricle filled with a fibrinous concretion, which must have been formed during life, as the masses of fibrin were grooved by the currents of blood passing over them from the inferior and superior venæ cavæ. With such cases death begins at the heart, the dyspnœa being caused by the want of blood in the pulmonic capillaries. The lips are slightly blue, the body is pale, the pulse irregular, while the heart-sounds are feeble and quick and irregular. The sounds are muffled, and sometimes there will be a bruit. The respiratory murmur is everywhere audible, and frequently there are signs of emphysema." (*Vide op. cit.*, p. 501.)

Neither Aitken nor Niemeyer, however, mentions thrombosis of the heart and embolism of the pulmonary artery as a complication of membranous croup.

CASE III. *Chronic tuberculosis, both pulmonary and glandular; thrombosis of right heart and pulmonary artery suddenly supervened: death occurred three days afterwards.*—A young gentleman, in the nineteenth year of his age, of good family and luxurious surroundings, had suffered from tuberculous infiltration of both lungs, together with extensive enlargement of the lymphatic glands of his neck, for more than three years, his condition having apparently been stationary for a long time.

As the cold weather came on, however, in the fall of 1867, he declined very rapidly. His appetite deserted him almost completely. He lost flesh and strength with great rapidity, although he had but little if any pulmonary softening, and no hectic or other form of fever. He got some renal difficulty of an obscure nature, but I failed to find albumen in his urine although I tested for it on several occasions. By the forepart of February, 1868, the marasmus was extreme, the face very pale, the debility great, although he still insisted on dressing and sitting up every day. On the morning of the 14th of February, he was weaker still, but got up and dressed as usual. Shortly afterwards, however, while sitting in his chair, he was suddenly seized with faintness, and gasped for breath; his face became tinged with blue and Hippocratic; his skin cold and bedewed with sweat; his pulse thready and so frequent that it could scarcely be counted; his respirations difficult, and the heart-sounds very weak and indistinct. Thus struck with death, he was placed in bed as soon as possible; stimulants were given internally, and dry heat applied to his feet, legs, armpits, etc. He did not rally, however, but lingered on in this collapsed state for almost three entire days, namely, from Friday morning at 11 o'clock, when the change occurred, till Monday morning at 9 o'clock, when death, which during all this time had been momentarily expected, at last closed the distressing scene. A post-mortem examination was not allowed; still the phenomena which preceded death were such as belong to thrombosis of the right chambers of the heart together with embolism of the pulmonary artery, and in all probability these lesions were the proximate cause of the sudden change in his symptoms, and of his death.

A case of bronchial phthisis or bronchiectasis, which had been under my care about three years, terminated fatally with symptoms of cardiac thrombosis, in December, 1871. No autopsy was held, still the symptoms were so well marked that I have no doubt as to what was the immediate cause of death.

Furthermore, it is not an unusual occurrence for other cachectic disorders besides phthisis to prove fatal by inducing thrombosis of the heart and pulmonary artery; for example, syphilitic marasmus, carcinoma, granular kidney, and chronic dysentery. Pallor from anæmia and leucocythæmia is generally a conspicuous feature of the disease belonging to this category. Mr. Paget has reported a case in which thrombosis of the pulmonary artery occurred in a person suffering from stricture of the urethra and paralysis of the bladder. (*Vide Medico-Chirurg. Trans.*, vol. xxviii. p. 353 et seq.) This patient had granular degeneration of the kidneys. Mr. Paget remarks: "The frequent coincidence of granular degeneration of the kidneys with old clots in the pulmonary arteries is interesting." (*Ibid.*, p. 367.) It occurred in at least three out of five cases of renal disease collected by this writer. So also, in fatal cases of typhus and typhoid fever, thrombosis of the right chambers of the heart and pulmonary artery is not unfrequently the proximate cause of death. In the treatment of these diseases it is practically a matter of much importance to obviate the tendency to thrombosis, for, if we succeed in doing

this, we will obviate the tendency to death, and thus, not unfrequently, will save patients who would otherwise be lost.

Again, the performance of a surgical operation is sometimes quickly followed by death, because thrombosis of the heart and pulmonary artery has been induced by it, or otherwise occurred in connection with it. The next three cases are examples in point.

**CASE IV.** *Thrombosis of right side of heart and pulmonary artery; the exciting cause probably the shock of a surgical operation; the efficient cause was doubtless abnormal coagulability of the blood; autopsy; lungs blanched and exsanguine; right heart and pulmonary arteries obstructed with a large, firm, decolorized, branched coagulum.*—Prof. Fayrer, of Calcutta, has reported an interesting and very instructive case in which cardiac thrombosis occurred. (See *Med. Times and Gaz.*, Nov. 2, 1867, p. 483.) It followed reamputation at the hip-joint for diffuse osteomyelitis of a recently formed stump.

The subject, a Hindoo lad, æt. 21, was admitted into the Medical College Hospital June 24, 1867, for traumatic inflammation of the right knee-joint of a destructive character. He had accidentally wounded this knee twelve days before with a cutting instrument. Amputation became necessary, and on July 2d, at 10 A.M., Prof. Fayrer performed the operation at the lower third of the thigh by a modified form of the circular method. We will continue the narrative in the operator's own words.

"July 3, 4 A.M. Bowels loose, moved four times since last report. Has not slept well, though he had an opiate. 7 A.M.: pulse 124; temperature 101°. Slight oozing from the stump on pressure.

"4th. *This morning I find that he is not doing well.* Pulse quick; skin hot. Had rigors during the day yesterday. Breathing hurried; dulness in the upper right side of chest, with moist râles. The stump is somewhat distended with blood, and the dressings are bloodstained. He appears to have had considerable venous oozing during the night. Opened the flaps, and removed blood-clots; found the bone protruding and stripped of its periosteum, the adhesion of that membrane being so feeble that the retraction of muscular fibre had stripped it from the bone; the medulla protruding, and, no doubt, suppuration commencing in the medullary cavity. The symptoms of toxæmia are already well-marked and rapidly increasing—so much so that removal of the entire bone by amputation at the hip-joint seems to offer the only, though but a small, chance of saving life.

"In consultation with my colleagues, the operation was at once decided on, and performed at 9 A.M. of July 4th. He was brought under the influence of chloroform, and the limb removed by the antero-posterior flaps. He was very low during the operation, though he lost but little blood, the artery being commanded by Prof. Partridge, whilst the limb was managed by Prof. Colles.

"Just after the operation his pulse was 140, and very feeble; temperature 98°. He remained in a depressed state until about noon, when imperfect reaction set in. When I saw him in the afternoon his pulse was 140; temperature 104°.

"5th, 7 A.M. He is not doing well; passed a restless night, although he had an opiate; has taken some nourishment and stimulants; is rather delirious, and tries to take off his bandages. Pulse still 140, and at times it rises even higher; temperature 103°; breathing rapid, and the lung sounds much as they were yesterday; no hemorrhage from the stump; general tenderness over the abdomen; his tongue is moist and blanched; he is restless, and has a tendency to delirium. Stimulants and nourishment ordered to be given frequently. 3 P.M.: He is much in the same condition, perhaps weaker; pulse very rapid, over 140; temperature 103°; has had no rigors since the operation. Shortly after, his breathing became very hurried, and he sank at 11 P.M.

"*Post-mortem examination at 9 A.M., July 6th.*—Decomposition, owing to the great heat and dampness of the weather, proceeding rapidly. *Thorax:* Pleuræ contained some fluid, but there were no evidences of inflammation. *Pericardium* also contained more than the natural quantity of fluid. Heart healthy in structure; left ventricle contracted, and contained neither blood nor fibrinous clot; right ventricle contained a firm, flattened, and adherent decolorized clot extending far into the ramifications of the pulmonary artery. The right auricle was stuffed with a firm, white clot, supplemented by a more recent clot. The obstruction evidently lay here. The lungs were blanched, some portions of them quite exsanguine; others contained a little blood. They were both emphysematous and œdematous. No change of structure anywhere in either the lungs or liver. *Abdomen:* No sign of peritonitis; no extension of inflammation or suppuration into the abdominal cavity along the crural canal. Pelvic fascia raised; no suppuration found anywhere in the pelvis: liver and abdominal viscera pallid, but healthy. Nothing remarkable in the stump.

"Bone examined after amputation; medulla infiltrated with pus.

"Reaction after the hip amputation never was thoroughly re-established, and, in this condition, embolism [thrombosis] rapidly occurring in the right side of the heart, terminated life."

*Remarks by Prof. Fayrer.*—"The immediate cause of death in this case appears to me to have been the formation of coagula in the right side of the heart, a pathological condition likely enough to supervene in the state of exhaustion—due to blood-poisoning in the first instance, and the shock of the amputation in the second—in which the patient was placed. The firm, adherent, decolorized clots in the right cavities of the heart, the plugged pulmonary arteries, together with the blanched, emphysematous, and œdematous lungs, clearly indicate this to have been the case. The earlier pathological condition of toxæmia was due, no doubt, to osteo-myelitis in the femur, setting in after the amputation of the lower third of the thigh. The absence of any structural change in the viscera leads me to suppose it possible that, had embolism [thrombosis] of the right side of the heart not occurred, and had reaction been more fully established, he might have recovered, as happened in the case of a young man whose thigh I removed at the hip-joint for osteo-myelitis some years ago, when the symptoms of pyæmia had well set in, but who recovered after the reamputation, and is now alive and well.

"The occurrence of these clots is not unfrequent in pyæmic cases, and is the immediate cause of death in many; and it may be regarded as one of the dangers to be apprehended in cases where blood changes have taken place after surgical operations or wounds, and it is probably a frequent cause of death in those rapidly fatal cases of pyæmia in which no structural changes are found in the lungs, liver, spleen, or kidneys, after death. No doubt death may occur from the intensity of the poison alone, without the presence of those fibrinous clots, or of gangrenous patches and puriform collections [which] we generally see in the lungs and other viscera; but I think that if such fatal cases were carefully examined it would be found that the fatal event might be traced to obstruction of the pulmonary circulation in the right side of the heart, more frequently than to the direct toxic effect on the blood and nerve-centres."

We concur with Prof. Fayrer in the opinion just expressed. Furthermore, we believe that central thrombosis should be looked upon as a complication which is liable to attend the performance of surgical operations in general, but more especially those done on cachectic subjects, or those involving much shock or hemorrhage. Now that our attention is directed to the matter we can call to mind several enigmatical cases that have occurred in our own practice, in which capital operations have proved unexpectedly fatal, in all probability, by inducing central thrombosis.

*CASE V. Ovariectomy followed by thrombosis of the right heart and pulmonary artery; death on the fourth day; autopsy.*—This case occurred in the

practice of Mr. Spencer Wells, and is reported by Dr. Parsons in the *Obstetrical Transactions*, vol. vii. London, 1866.

The subject was a young woman, æt. 20, and moderately healthy. The operation was quickly and easily performed. She recovered satisfactorily from the anæsthetic, which was chloroform, and remained comparatively well for twenty hours. About this time her pulse rose to 120, and she became very thirsty.

On the 2d day her pulse rose to 140, "and there was a peculiar look of oppression in the countenance."

On the 3d day this oppression was greatly increased; pulse 140 to 150; urine albuminous and scanty; heart-sounds indistinct and muffled, and a peculiar dusky hue about the face appeared.

On the 4th day she became still more oppressed and very restless, the surface of her body grew cold and white, and thus she died.

At the *autopsy* the thrombus was seen to be firmly adherent to the greater part of the wall of the right ventricle, and particularly so in the auricular appendage where it seemed to have begun; for here the clot almost filled the appendix, and was accurately moulded to the little muscular eminences. The clot was continued through the tricuspid opening into the right ventricle, and where it passed through this opening almost filled it; in the right ventricle this clot was intricately interlaced with the chordæ tendinæ and columnæ carneæ. As the thrombus extended along the pulmonary artery to the lungs, it was found to be tubular and adherent to one of the semilunar valves. The foregoing is an abstract of the original report. The case is there entitled embolism of the pulmonary artery, but it seems to have been, in reality, an example of primary thrombosis of the right chambers of the heart and the pulmonary artery.

E. von Wahl has related a case of pulmonary embolism which occurred after the removal of a tumour. (See *St. Petersb. Med. Zeitschr.* v. 327; also *New Syd. Soc. Year Book*, 1864, p. 193.) The particulars are not given in the works to which the writer has access.

**CASE VI.** *External urethrotomy performed for the relief of urinary fistula in perineo resulting from stricture; death on third day with symptoms of central thrombosis.*—This case occurred at Bellevue Hospital, in the practice of Prof. Gouley, to whom the writer is indebted for the notes of it.

A young man, æt. 23, a bar-tender, the subject of an old urethral stricture, which some time previously had led to retention of urine and the formation of fistula in perineo, and now an inmate of Bellevue Hospital, was operated on by Prof. Gouley at this hospital, October 19, 1867. He seemed to be in fair condition. Careful examination of his urine had failed to reveal any evidence of bladder or renal disease. He had no constitutional disorder except a syphilitic taint, which was evidenced by copper-coloured scars on his legs and some nocturnal rheumatism. The operation (external urethrotomy) was quickly and easily performed. The patient was kept on the operating table not more than fifteen minutes. The anæsthetic was sulphuric ether. He bore it well, and recovered promptly from it and from the shock of operation. He did not lose more than two ounces of blood. At the evening visit slight febrile reaction was observed; pulse 100. He said he had had a chill.

*October 20.* This morning he was quite comfortable and free from pain, but his pulse was somewhat above 100. That afternoon his heart's action suddenly became very rapid and feeble, and his breathing laboured.



Under free stimulation he rallied somewhat, but the improvement did not long continue.

21st. He presented a cyanotic appearance; his countenance was tinged with blue and Hippocratic; his pulse very feeble and so rapid that it could not be counted, and his breathing laboured. At the same time he was perfectly sensible and free from pain. He continued to sink, and died that evening fifty-six hours after the operation. He had no vomiting, nor diarrhœa, nor hemorrhage, nor suppression of urine. No autopsy could be obtained because of opposition from his friends. The clinical phenomena, however, clearly indicate that the blood-flow was obstructed in the right side of the heart and pulmonary artery with coagulum.

It is worthy of remark that this man was labouring under constitutional syphilis, and therefore was not free from blood-disease, when the operation was performed. We shall have occasion to mention in another place several syphilitic cases in which thrombosis supervened.

But thrombosis may also occur on the left side of the heart. In all the cases which we have thus far related, it is believed that only the right chambers of the organ were affected, or at least that they were the principal seat of the disorder. We shall next refer to some instances of a different character.

McKendrick (*Edinburgh Med. Journ.*, xv. 396) publishes a case of cardiac thrombosis that occurred in a girl of nineteen, in which the clot caused death by closure of the mitral orifice. (Vide *New Sydenham Soc. Retrospect*, 1869-70, p. 153.)

Bristowe (*Path. Soc. Trans.*, London, xix. 90) gives the case of a widow who suffered from chronic renal disease, aggravated by catching cold, and gradually sank. The autopsy showed cystic kidneys with shrunken cortex; the heart contained large adherent clots. At the apex of the left ventricle were several rounded, smooth coagula, softened within to a creamy pulp, inclosing, in places, numerous hæmatoid crystals, and attached to the parietes by means of processes prolonged beneath the columnæ carneæ. He holds the case to be an instance wherein heart-clots were formed some considerable time before death, long enough at least for puriform softening to occur in them. (*Ibid.*, p. 154.)

Gaskoin (*Med. Times and Gaz.*, 1869, ii. 276) records a case of "polypus" of the left side of the heart, causing sudden death in a lad of seventeen. After death a yellow ribbon-like clot was found implanted in the columnæ carneæ, enveloping the tendinous cords of the mitral, and prolonged into the aortic orifice. In its middle a bulging existed which contained about a drachm of disorganized blood. He considers it possible that the aorta was occluded, and thus death produced. (*Ibid.*, p. 154.)

Bucquoy (*Gaz. Hebdom.*, 1869, p. 155) showed to the *Société Médicale des Hôpitaux* a preparation in which an old thrombus (concretion polypiforme) was adherent to the top of the cavity of the left ventricle, without any other lesion of the endocardium; connected with the old clot was one

of more recent origin, about the size of a hen's egg, non-adherent, and exactly filling the cavity. It was taken from a woman aged twenty-six, who had presented symptoms of mitral insufficiency (hypertrophied and dilated heart, with systolic bruit at base propagated into axilla). He remarks that it was doubly interesting, first, as an example of thrombus formed a long time before death; and, again, because, in spite of the physical symptoms, it was the only lesion found. (*Ibid.*, p. 154.)

*The symptoms of central thrombosis* vary according to the part of the heart affected, the size of the clots, the rapidity of their formation, and the strength or vitality of the patient. When the right side of the heart or the pulmonary artery is the seat of the thrombi, the symptoms are those of more or less suddenly produced asphyxia, syncope, and disordered action of the heart itself. Playfair's patient complained of feeling weak; then her rapid and difficult breathing attracted attention, and in a short time she died. Roget's case exhibited severe dyspnœa. In puerperal subjects faintness, irregular action of the heart, and distressed breathing suddenly occur, the tendency to collapse rapidly increases, and death usually soon ensues. Sometimes, however, these subjects complain only of sudden dizziness and faintness, gasp for breath, and quickly die. Niemeyer observed in his two cases of pulmonary embolism the signs of extreme dyspnœa and collapse; and he calls the disorder a "peculiar kind of suffocation." Malmsten's case exhibited great dyspnœa and severe palpitation; the heart-beat was so strong that the chest was shaken by it. My own cases show that, when thrombosis of the right heart or pulmonary artery occurs, dyspnœa of greater or less severity, syncope of greater or less intensity, and disturbance of the heart's action in the shape of increased frequency, or irregularity, or palpitation, one or all combined, suddenly present themselves; the countenance exhibits great anxiety and rapidly becomes pale, with a blue or purple tinge on the margins of the lips; the skin is soon bedewed with cold sweat; the pulse at the wrist is found to be frequent, feeble, sometimes irregular, and it generally becomes in a short time imperceptible; the signs of asphyxia and collapse rapidly increase, and death usually soon closes the scene. On listening to the chest we find the respiratory murmurs either normal or somewhat increased in intensity (puerile), and the heart-sounds more or less indistinct or muffled and tumultuous; occasionally, however, a bellows murmur may be heard over the pulmonary artery when the orifice of that vessel is obstructed. In one of Dr. Playfair's cases, "immediately over the site of the pulmonary artery was a distinct, harsh, rasping murmur, confined to a very limited space. Heart-sounds feeble and tumultuous," as already stated. The dyspnœa is caused by diminution of the breathing-space in the lungs when a large branch of the pulmonary artery is obstructed, and by want of blood to be oxygenated in the pulmonary capillaries in general when the main trunk of that vessel is blocked up. The bellows murmur mentioned

above has been only occasionally observed in thrombosis of the right heart or pulmonary artery.<sup>1</sup>

When the left chambers of the heart are affected, the symptoms differ somewhat from those mentioned above. The intense dyspnœa and other symptoms of suffocation already mentioned are either absent or much less strongly marked. If the thrombus extends from the left auricle through the mitral opening into the left ventricle, the symptoms are likely to be those of mitral obstruction and mitral insufficiency. Thus, Bucquoy observed in his case of thrombosis of the left heart the symptoms of mitral insufficiency, viz., hypertrophy and dilatation of the organ, with systolic bruit at its base, propagated into the axilla, as already mentioned. In McKendrick's case it is stated that death was produced by closure of the mitral orifice. If, on the other hand, the thrombus extends from the left ventricle through the aortic opening into the aorta, the symptoms are those of aortic obstruction and insufficiency of the aortic valves. Gaskoin found in his case that the clot was prolonged into the aortic orifice, and he thinks it possible that the death, which was sudden, was due to occlusion of that orifice. Furthermore, thrombosis of the left side of the heart is likely to be attended with pulmonary hyperæmia, with a cyanosed appearance of the countenance, etc., with a turgid condition of the external jugular and other veins of the neck and face, and with a remarkable weakness or even absence of the radial pulse. It is also probable that, in the less acute cases of this form of cardiac thrombosis, cardiac murmurs may not unfrequently be detected by auscultation at points on the chest corresponding with the disturbance which the clots may occasion at the mitral or aortic openings of the heart respectively.

2. *Peripheral Thrombosis.*—There are two varieties of this affection, namely, *a, venous*, and *b, arterial*. They depend upon whether the peripheral veins or the peripheral arteries are the seat of disorder. The former, however, occurs much more frequently than the latter, and possesses a much greater degree of importance in a practical point of view.

We shall now proceed to relate a considerable number of cases in which

<sup>1</sup> In examining post-mortem the cases where thrombosis of the right heart and embolism of the pulmonary artery have occurred, we find a considerable variety in the appearances presented by the pulmonary tissue. In some cases well-marked infarctions are present; in other cases, such, for example, as No. I., the pulmonary tissue is congested, and in others still, such, for example, as Professor Fayer's (No. IV.), that tissue is found to be blanched and exsanguine. These differences appear to depend upon the size and place of lodgement of the occluding plugs in the pulmonary artery. If the main trunk is suddenly and completely closed by a thrombus, the lungs become blanched and exsanguine; if only partly closed, they become congested, and if, instead of the trunk, the branches become plugged by small clots, then infarctions are found in the corresponding parts of the pulmonary parenchyma.

thrombosis occurred in the veins of the extremities—enough to illustrate the principal forms of traumatic or surgical thrombosis that are met with in the extremities, together with the clinical and pathological history of the same. All of them occurred in the writer's practice.

*CASE VII. Compound fracture (gunshot) of right thigh; pyæmia; death; autopsy; metastatic abscess in left popliteal space; thrombosis of left femoral and external iliac veins; embolism of right femoral artery, near the seat of fracture; right femoral vein free from coagula; no visceral abscesses; spleen enlarged and softened; kidneys somewhat granular, etc.*—Private J. S., Co. "A," 55th Ohio Vols., aged 20, admitted to the Stanton U. S. Army General Hospital, June 15, 1863, for a wound received on the 2d of May, in the battle of Chancellorsville. He sustained a gunshot fracture of the right femur. He also informed us that the projectile had not been extracted, and that he had been treated in the Field Hospital at Potomac Creek, until the military operations rendered the evacuation of that place necessary. A simple straight fracture-box had been employed in the treatment of his injury, and his limb was still in it when he was brought to Stanton Hospital.

Examination at the time of admission showed that the right femur was broken near the junction of the lower with the middle third, that union had not yet taken place, that the wound of the soft parts still remained unclosed, and that a thin purulent matter was discharged in large quantity from the orifice of this wound. He was pale or anæmic, emaciated, and weak. His pulse was frequent and irritable; his tongue smooth, dry, and red, and he complained of having diarrhœa; said, however, that the diarrhœa was an old affair, and that he had also had chills and fever some time back. The prognosis was very unfavourable. The treatment consisted in placing the injured limb in Hodgen's cradle-splint, in supporting him with nourishing food, using eggs, milk, farina, beef-tea, and chicken-broth as extras, together with a liberal allowance of milk-punch daily, for that purpose, and in administering pil. camphor. et opii to control the diarrhœa.

June 18. The diarrhœa is checked; but the tongue continues red and smooth, and there is considerable irritability of stomach. Directed camphor and opium pills to be suspended, but the supporting treatment to be continued.

22d. Secondary hemorrhage from wound in thigh, to the extent of about three ounces, occurred this morning; a slight hemorrhage also took place yesterday. The blood probably came from some branch of the arteria profunda. Liquor ferri persulph. fʒij was now thrown into the bottom of the wound through a catheter, and the bleeding was permanently arrested.

24th. Complained of pain in his thigh, was restless, and had some diarrhœa. Gave pil. opii gr. j, every four hours, and continued the supporting treatment.

26th. Stopped the opium, as the diarrhœa was checked. Tongue still smooth and red, and the purulent discharge continued to be profuse. Nourishing diet, with stimulants, continued.

July 2. He appeared to be slowly failing. Fluctuation having been detected just above the internal condyle of the femur, an incision was made and about two ounces of pus evacuated. Directed quiniæ sulph. gr. ij, in solution, to be administered three times a day; spiritus frumenti

f5vj to be taken daily in place of the milk-punch, as he thought the latter did not agree with him, and the extra diet to be continued.

8th. Began to exhibit night-sweats, with increase of pallor and anæmia; purulent discharge profuse, dirty-looking, and fetid; necrosed bone, firmly impacted, can be felt at bottom of wound.

18th. Had a chill which was distinctly followed by a hot and sweating stage. Prescribed quiniæ sulph. gr. x, ter in die, and the chills did not return until four days afterwards.

20th. Very pale and feeble; tongue still smooth and red. Ordered quiniæ sulph., with tinct. ferri muriat., porter two pints daily, and nourishing food.

21st. The diarrhœa returned, and was again checked by administering opium pills.

22d and 23d. Had chills occurring at irregular intervals, associated with hot flushes and profuse perspiration, *i.e.* the symptoms of pyæmia, and his debility was much increased. i

25th. Evacuated some dirty, stinking pus from inner side of right thigh by incision.

27th. He again had pyæmic rigors and sweats; was now much emaciated, very pale, and very weak; pulse 120, and feeble, tongue glazed and bright red.

29th. The pyæmic rigors and sweats continue, the perspiration being very profuse. His left or unwounded leg and thigh have suddenly become swollen with œdema, and present a bluish or cyanosed appearance. The subcutaneous veins of this limb look like dark-blue knotted cords. These symptoms denote that the flow of blood upwards towards the heart through the corresponding femoral and external iliac veins has been suddenly obstructed. From this time he sank still more rapidly, and died, exhausted from pyæmia, July 31.

*Autopsy twenty-four hours after death.*—Fragments of the right or broken femur firmly united; necrosed parts closely surrounded by involucrem; muscles and intermuscular connective tissue of right thigh extensively infiltrated with pus; bullet (a conoidal one, and much flattened) was found in the lower part of inner side of thigh. Femoral artery opposite the place of fracture contained an oval-shaped, reddish, flesh-like coagulum, or embolus, having the size of a small bean, which completely occluded it; no other abnormality of artery noticed. On examining the left thigh we unexpectedly found a metastatic abscess in the popliteal space, containing about an ounce of pus. The external iliac and femoral veins of this thigh were also found to be filled up with recently coagulated blood, or thrombi, while the veins of the right or wounded limb were normal. The thrombosed veins of the left thigh were so well filled with coagula that they presented a knotted appearance; their walls were somewhat thickened, apparently from imbibition, their internal surface exhibited a reddish stain derived also from imbibition, but there was no plastic exudation, no capillary injection, no inflammatory reddening within or on their tunics, and no evidence whatever that a genuine phlebitis existed. The lungs contained some frothy serum, *i.e.* they were œdematous, but in other respects natural. The left auricle and ventricle of the heart each contained some firmly coagulated blood; the right chambers also contained fibrinous coagula. The liver was somewhat enlarged, nutmegged, and fatty. The kidneys were beginning to be granular. The spleen was enlarged, softened, and reddish-brown in colour.

*Comments.*—This case possesses great importance, and, therefore, has been related with considerable minuteness. This patient had pyæmia, thrombosis of the veins of one thigh, and embolism of the main artery of the other thigh, in addition to gunshot fracture of the femur; and his case serves uncommonly well to illustrate the symptoms which are sometimes produced by peripheral thrombosis, and to show the kind of relationship which exists between this affection and pyæmia.

With regard to the symptoms, we may remark that, as soon as the great veins became obstructed with coagula, certain objective phenomena of a very striking character were produced. The whole limb suddenly became expanded with an œdematous swelling, having a bluish leaden or cyanosed hue, together with a strongly dilated condition of the subcutaneous veins. They looked like dark-blue knotted cords lying just beneath the skin. They were widely expanded because the blood, being no longer able to find its way back towards the heart through the deep or thrombosed channels, had sought to pass through the superficial veins, in great quantity, as the collateral channels. The limb became œdematous because the collateral channels were insufficient, and did not permit the blood to flow out of the limb as fast as it flowed into the limb through the arteries. Its surface was tinged with a bluish or leaden hue because the hyperæmia was very great, and the blood stagnated in the radicles of the cutaneous veins.

With regard to the pyæmia, we may observe that the symptoms which characterize this disease fully revealed themselves more than a week before death, and that the symptoms of thrombosis did not appear until several days afterwards. The symptoms of the latter first showed themselves only two days before death, that is, about a week after unmistakable signs of pyæmia had appeared. We must also remark that a so-called metastatic or secondary abscess, itself a product of the pyæmia, was found in the left popliteal space, and that the process of blood-clotting, or the thrombosis in all probability began in the small veins proceeding from the site of this abscess. From it the thrombosed vessels doubtless sprang. The formation of this abscess evidently preceded that of the thrombi. The morbid products found in it were obviously of an older date than those found in the veins. The pus in it was comparatively old, while the coagula in the veins were quite recent. As stated above, the vessels in which the thrombosis commenced, in this case, were doubtless some of the venous radicles belonging to the walls of the secondary abscess. From them the process of coagulating the blood extended itself to the next larger veins, and from them in turn to those next larger still, until finally it entered the femoral and external iliac veins, and caused them to be filled up with thrombi. This order or succession of marches from the lesser to the next greater vessel, which this variety of peripheral thrombosis generally observes in its advance, until the main vein of the extremity is invaded, has been clearly described and illustrated with drawings by Virchow (see *Lectures on Cel-*

*lular Pathology*, pp. 235 to 240, Am. ed.), and by Mr. Callender (see *Holmes's System of Surgery*, vol. iii. pp. 297, 298, 1st ed.). Virchow says :—

“The thrombi in the small branches do not content themselves with advancing up to the level of the main trunk, but pretty constantly new masses of coagulum deposit themselves from the blood upon the end of the thrombus, layer after layer, the thrombus is prolonged beyond the mouth of the branch into the trunk in the direction of the current of the blood, shoots out in the form of a thick cylinder further and further, and becomes continually larger. Soon this *prolonged* thrombus no longer bears any proportion to the original (*autochthonous*) thrombus, from which it proceeded. The prolonged thrombus may have the thickness of a thumb, the original one that of a knitting-needle. From a lumbar vein, for example, a plug may extend into the vena cava as thick as the last phalanx of the thumb.” (*Op. cit.*, p. 239.)

Thus, the clotting process, after commencing in the venous radicles of an extremity, may spread upwards by prolongation from branch to branch, until finally the trunk-vein itself becomes plugged up with thrombi; and we believe that this occurred in the case which we have just related.

The embolism which was revealed by the autopsy of this case occurred in the wounded limb, while the thrombosis, as we have shown above, took place in the uninjured one. The plug (*embolus*) was found in the femoral artery opposite the place of fracture. It consisted of a firm, reddish-coloured coagulum. It was oval-shaped because its angles had been rounded off while it was swept along in the torrent of the arterial blood. It had obviously become stuck fast in the right femoral, because the calibre of this artery was too small to allow its further progress, and in consequence thereof, it filled up the vessel like a plug. The embolism probably occurred during the last hours of life, for the limb had not yet suffered any of those secondary changes which are sure to follow this accident when life happens to be prolonged. The embolus doubtless came or migrated from the left ventricle of the heart. A thrombus was formed in that situation as death approached, and a fragment having been detached from it was carried away in the blood-stream to the right femoral artery, where its journey was arrested in the manner above stated. It is, however, a remarkable coincidence that the migration of this clot ceased at the point which was nearest to the place where the femur was broken; but there is no proof that this coincidence was anything more than an accident.

Concerning the thrombosis of the heart, to which allusion has just been made, we should state that it involved both the right and the left sides of the organ, and both auricle and ventricle on each side. The cardiac coagula probably began to form as soon as the circulation began to fail, and the blood began to stagnate in the cardiac chambers. This event probably occurred either on the day of dissolution, or on that which preceded it.

The formation of thrombi in the veins of the left thigh in this case was not due to inflammation of those vessels, as we have fully shown, nor yet entirely to the putrescent character of the popliteal abscess, nor even priu-

cipally to causes which were local in their operation, for the thrombosis was not limited to these vessels; it presented itself also in all the cavities of the heart. Now, the efficient cause of the thrombosis was doubtless the same in the heart as it was in the peripheral veins, and should be sought for in some abnormal condition of the blood itself—in some state of that liquid which occasions preternatural coagulability. Thus, it happened that when this morbid tendency of the blood to curdle was favoured by the operation of local causes, such, for example, as stagnation in the heart and a corrupting abscess in the limb, thrombosis occurred in each of these situations. Moreover, this patient had shown decided evidence of blood-disease for at least two or three weeks before death. It first presented itself in the shape of anæmia (leukæmia?), which steadily increased, then hectic fever with night-sweats appeared, and finally pyæmia occurred. The autopsy revealed advanced splenic and commencing renal disease. These circumstances obviously favour the hypothesis that the thrombosis was mainly due to some morbid state of the blood.

Lastly, this case shows what relationship actually subsists between peripheral thrombosis and pyæmia. Virchow, and others who adopt his views, assert, that, when pyæmia occurs, it is because the softening or disintegration of thrombi in the peripheral veins furnishes embolia in the shape of minute shreds and fragments of the dissolved thrombi, in more or less considerable numbers, which are carried to the right side of the heart by the stream of venous blood, and, passing onwards into the pulmonary artery, they become arrested in the ramifications of that vessel, and in the end plug them up, inducing thereby pulmonary infarctions, secondary inflammations, metastatic abscesses, etc.; or, in other words, that pyæmia is a consequence of peripheral thrombosis. Now, the case which we have just related shows very clearly, 1st, that peripheral thrombosis and pyæmia do not necessarily stand to each other in the relation of cause and effect, because, in it, the pyæmia preceded the thrombosis by a considerable number of days, and, therefore, could not have been produced by it; 2d, that the presence of infarctions, or secondary inflammations, or secondary abscesses in the lungs or any other viscera, is not essential to the production of pyæmia, for in this case all the viscera were quite free from these lesions; and 3d, that the only tie which binds pyæmia to peripheral thrombosis, or *vice versa*, is the circumstance that both of them depend for their existence upon disease of the blood. An examination of other cases, however, will show us that the disorder of the blood which constitutes pyæmia, and that which induces peripheral thrombosis, are not the same, for we shall find a great many cases in which thrombosis of the peripheral veins is not attended with pyæmia, and some cases in which pyæmia is not attended with peripheral thrombosis. Thus, the foregoing case, when taken in connection with others, proves that the relationship of peripheral thrombosis



to pyæmia, and *vice versa*, is, after all, not very intimate in its nature; certainly not that of parent and offspring.

CASE VIII. *Gunshot wound of right thigh in middle third; bone apparently not injured; bullet lodged; well-marked symptoms of pyæmia; parenchymatous hemorrhage on 32d and 33d days; death; autopsy; femoral, external, and common iliac veins filled up with coagulated blood (thrombus), which, in some places, was undergoing puriform liquefaction.*—Private B. R., Co. "F," 6th Michigan Cavalry, was admitted into the Stanton U. S. Army General Hospital, September 25, 1863, for a gunshot wound in the middle third of his right thigh, received two days previously. The ball penetrated his thigh on its inner side, and, lodging in a deep situation, was not extracted. The wound had been treated with simple dressings, and appeared to be doing well.

October 11. The ward surgeon, at the morning visit, found him perspiring very freely; he said that he had had a chill, followed by fever, in the night: quiniæ sulph. gr. xxx was ordered; the wound looked well, and its discharge appeared normal. The chills ceased, but he gradually sank into a typhoid condition, with symptoms of rheumatism in several joints; he could not move his left arm, or either of his lower extremities; complained of suffering acute pain whenever he was stirred; the left knee was somewhat swollen; there was some œdema in the right or wounded thigh; his tongue was dry and covered with a thick yellowish-brown coat; it could not be readily protruded; his skin was hot, yet generally moist, and often wet with sweat; mental faculties sluggish; bowels loose, but not to the extent of diarrhœa; stools, most of the time, dark-coloured; sometimes the feces and urine were passed in bed without the patient's knowledge; his pulse ranged at about 100; he was treated with quinia and iron, stimulants, beef-tea, etc., with gradual improvement of all his general symptoms; the tongue became more moist, the intellect brighter, the pulse subsided to about 80, he could be handled without suffering much pain in the joints, and he acquired some appetite.

Meanwhile the wounded limb grew more œdematous. It was not, however, noticed as anything remarkable until about Friday, October 23. The surface of the wound looked well, but the discharge was slightly tinged with a greenish hue and had some odour. October 25, while the patient sat in a chair in order to have his bed made, hemorrhage from the wound suddenly took place. It amounted, in the ward-surgeon's opinion, to four or five ounces. It was venous in character, judging from the colour and steadiness of the flow. It ceased spontaneously. He was placed in bed, and soon afterwards had a chill, which, however, lasted but a few minutes. From this time he rapidly failed. In the night he had another chill. On the next morning (October 26) the bleeding returned to the extent of three or four ounces. It again ceased spontaneously. He had several chills during the day, continued to sink rapidly, and died about 3 o'clock P.M.

*Autopsy twenty hours after death.*—Lungs fastened to thorax by numerous old adhesions; moderately congested; otherwise sound; milk-spot on anterior surface of heart; no other abnormality of that organ noticed; blood watery and cherry-coloured; liver bronzed from malarial intoxication, but exhibits no other abnormality; spleen moderately enlarged and somewhat softened; intestinal canal presented nothing abnormal.

The right lower extremity was much swelled and œdematous from foot to groin. Its surface presented a remarkably white colour. On opening

this thigh and groin by incisions made along the course of the femoral and iliac arteries, the chain of lymphatic ganglia is found to be very much enlarged in all its component parts. The walls of the femoral and iliac (both external and common) veins are very much thickened. In several places where these vessels were opened by cutting with scissors the walls appeared to be about three times thicker than natural, as was remarked by Dr. Woodward. The upper part of the common iliac vein was occluded with a plug of coagulated blood, which adhered firmly to the sides of the vessel. Its apex was conical in shape and pointed upwards towards the heart. The interior of this plug was undergoing softening or fatty transformation. Below, or on the distal side of this plug the veins (common iliac, external iliac, common femoral, and superficial femoral as far as examined) were filled with a thick, dirty-looking liquid, having an ashy-brown colour, and consisting of blood-clot or thrombus undergoing spontaneous disintegration. The lining membrane of these veins had lost its polished and shining appearance, and was coated over with a yellowish-brown layer of what seemed to be plastic exudation. The matter contained in these veins was not purulent but puriform. The vena profunda femoris was filled with a recent coagulum. The vena cava ascendens was stained dark red on its interior with hæmatoidin. The femoral and other arteries were sound. The thrombosed veins were not inflamed, *i.e.*, their walls were not the seat of any primary inflammation, but exhibited only the consequences of thrombosis. The thickening and other changes in their coats were all of a secondary nature and resulted from the formation and disintegration of coagula within their calibre.

There was a good-sized abscess filled with dark-coloured and very fetid pus, situated near the junction of the external and internal iliac veins and dipping down considerably into the pelvis. It communicated with the calibre of the external iliac vein through an aperture made apparently by ulceration. It is, however, possible (but not probable) that this opening in the wall of the external iliac vein was made by accident while performing the autopsy.

*Comments.*—The thrombosis described above probably began in some of the venous radicles belonging to the walls of the abscess which had been formed in the thigh in consequence of the gunshot wound. Afterwards the coagula were prolonged from the smaller to the next larger tributaries, step by step, until finally the superficial, the deep, and the common femoral, together with the external and common iliac, veins became filled up with clotted blood. This accident mostly occurred some considerable time before death, and meanwhile the thrombus itself, instead of becoming organized, underwent disintegration to great extent, and acquired the appearance or properties which are due to puriform softening to corresponding extent. Concerning this process Virchow says :—

“Upon investigating the history of these thrombi, we find that the puriform mass which is met with in their interior does not originate in the wall [of the vein], but is produced by a direct transformation of the central layers of the clots themselves—a transformation, indeed, which is of a chemical nature, and during which, with a result similar to that which can be artificially obtained by the slow digestion of coagulated fibrin, the fibrin breaks up into a finely granular substance, and the whole mass becomes converted into *debris*. This is a kind of softening and retrograde metamorphosis of the organic sub-

stance, in the course of which, from the very commencement, a number of extremely minute particles become visible; the large threads of fibrin crumble into pieces, these again into smaller ones, and so on until after a certain time has elapsed the chief part of the mass is found to be composed of small, fine, pale granules. In cases where the fibrin is comparatively very pure, we frequently see scarcely anything else than these granules."

Thus, "the microscope solves the difficulties in a very simple manner, by demonstrating that this mass, which looks like pus, is not pus. For we understand by pus a fluid essentially provided with cellular elements. Just as little as we can imagine blood without blood-corpuscles, just as little can pus exist without pus-corpuscles. But, when, as in the present instance, we find a fluid which is nothing more than a mass pervaded by granules, this may, indeed, as far as external appearance goes, look like pus, but never ought to be regarded as real pus. *It is a puriform, but not a purulent substance.*" (See *Virchow's Lectures on Cellular Pathology*, pp. 233-234 Am. ed.)

But we frequently see in softening thrombi certain morphological constituents besides these granules, certain real cell-structures, which are round (spherical), or angular, present one, two, or more nuclei, often lie tolerably close to one another, and exhibit a strong resemblance to pus-corpuscles, the principal difference being that very frequently fat-granules occur in them, indicating that a process of disintegration is going on. These cell-structures are the white corpuscles of the blood. Whilst, therefore, in some cases there can, on account of the very greatly preponderating mass of *debris*, be no doubt as to what the observer has before him, in others considerable doubt may exist as to whether real pus is present or not. These doubts cannot be removed in any other way than by an examination into the history of the development of the puriform mass itself. The colourless blood and pus-corpuscles resemble each other so closely that it is generally impossible to draw a real distinction between them. The question, therefore, which suggests itself when we find round, colourless, nucleated cells in a softening thrombus, whether these cells are white blood or pus-corpuscles or not, can only be decided by determining whether they were present in the thrombus from its very commencement, or sprang up in it afterwards, or entered it in some other way. Now, upon closely following up the different stages of the process, the result is very positively obtained that the corpuscles pre-exist—that they do not arise within the clot, and are not forced into it. Even when fresh thrombi are examined, the corpuscles are found, in many places, heaped up in great masses, so that, when the fibrin breaks up, they are set free in such numbers that the *debris* are almost as rich in cells as pus. It is with this process just the same as when water which is thoroughly impregnated with solid particles is frozen and then warmed again; when the ice melts, the inclosed particles must of course again come to light. (*Virchow.*)

But to this view an objection of some importance may be raised, namely, that we do not see the red corpuscles of the blood set free in a similar manner. The red corpuscles, however, perish very early; they are soon seen to grow pale; they lose a portion of their colouring matter and become smaller or shrunken, whilst numerous dark granules appear at their circumference, and, in the majority of cases, they entirely disappear, nothing but these granules at last remaining. Still there are also cases in which the red corpuscles maintain their integrity within the softening mass. As a rule they certainly perish, and it is upon this circumstance that the peculiarity of the transformation depends, whereby a yellowish-white liquid having the colour of pus springs from clotted blood. And for it too an explanation may be found without much difficulty, if it be borne

in mind how very trifling is the power possessed by the red corpuscles of the blood to resist the most various reagents. If to a drop of blood you add a drop of water, you see the red corpuscles disappear before your eyes while the colourless ones remain behind. (*Virchow*, p. 234.)

Thus we perceive that the disorder which was formerly called suppurative phlebitis, is essentially neither suppurative nor inflammatory in character, that it is not a phlebitis but an affection of the blood itself in consequence of which coagula spontaneously form in the peripheral veins, and, when life is sufficiently prolonged, undergo puriform softening. The whole history of the process by which puriform matter is produced in the veins in such cases is contained in the history of the thrombi themselves. (*Virchow*, p. 236.)

Furthermore, the process runs its course in such a way that the most recent parts of the thrombus always consist of the blood which has most lately coagulated. The softening or the partial liquefaction generally commences in the centre, in the oldest layers, so that, when the thrombus has attained some considerable size, there exists in the midst of it a cavity of larger or smaller dimensions, which gradually enlarges and keeps approaching more and more closely to the wall of the vessel. But this cavity is usually defended at both its proximal and distal ends by means of a more recent and tougher portion of the clot, which, after the manner of a cap, takes care that, as Cruveilhier says, the "pus" remains sequestered, and all contact between the *debris* and the circulating blood is prevented. The softening continues to extend in a lateral direction until finally it reaches the wall of the vein itself; this then becomes altered, it begins to grow thicker and at the same time cloudy, and ultimately even suppuration takes place in the substance of the wall. (*Virchow*, p. 237.)

In such cases the phlebitis is obviously secondary and results from irritation engendered by the disintegrating clot.

Precisely the same metamorphosis of coagulated blood which we have seen taking place in the veins, sometimes occurs in the heart also. In the right ventricle especially, we not unfrequently see what are called purulent cysts between the trabeculæ of its walls. They project into the cavity like small rounded knobs, and form little pouches which, when cut open, are found to contain a soft pulp that may present a completely pus-like appearance. (*Virchow*.)

Billroth, however, thinks that the thrombus is sometimes transformed directly into pus. He says:—

"I have no doubt on this point. If the blood-cells in the thrombus have the power of increasing and changing to tissues, as seems most probable, there is no reason for not referring to them the formation of pus in the thrombus, just as we do to the white cells wandering out of the vessels, for the coagulation of the blood is not firm enough to entirely prevent cell-movement. That the thrombus may change to true pus by division of the white blood-cells does not appear to me disproved; we have already mentioned that this pus, which is entirely incapsulated, does not enter the circulation, or does so very rarely, and hence has no direct connection with pyæmia. To resume my experience of venous thrombi, and the history of thrombus, they are to the effect that most venous thrombi are the result of very acute inflammation of cellular tissue (especially under fasciæ, or tense skin, and in bone), and that the coagulum undergoes the

same metamorphosis as the inflammatory new formation. If the latter lead to formation of tissue, the thrombi are also organized to connective tissue; if the inflammation goes on to suppuration or putrefaction, the thrombi also suppurate or putrefy and break down. This is the easier to understand, as we know, from *Von Recklinghausen's* and *Bubnoff's* investigations, that the cells from the tissue may pass through the walls of the vein into the thrombus. The walls of the vein have the same fate as the thrombus and surrounding tissue; they are infiltrated with plastic matter, and become thicker, or they suppurate." (*Vide Billroth's General Surgical Pathology and Therapeutics*, p. 324, translated by Hackley. New York, 1871.)

Again, in the case which we have just related, the walls of the thrombosed veins were found to be very much thickened. This change appears to have been due, in part at least, to contraction of their calibre, and to the imbibition of serum. On this point Mr. Callender remarks:—

"As each coagulum is formed, it *contracts*; and it often happens, being firmly fixed by its roots, as we may term its prolongations into the small branches, that the vein-wall is drawn with it in its retraction, becoming condensed and thickened in appearance, so much so that when cut across it resembles an artery. Indeed this condition is generally mistaken for an inflammatory thickening of the vessel; but in the case of the young woman narrated at page 293 [*Holmes's Surgery*, vol. iii. 1st ed.], suspecting the nature of the change, I removed the internal saphena, which was contracted, thick, and hard like a piece of whipcord, and having injected water into a part of the vessel, easily restored that portion of the canal to its ordinary size and the vein-wall to its usual appearance, so that in the preparation it forms a marked contrast to that part of the vessel which remains condensed. Had its walls been thickened by any inflammatory deposit, they would not have yielded to the slight pressure which was employed." (See *Holmes's Surgery*, vol. iii. p. 299, 1st ed.)

But, in the foregoing case, the swelling of the coats in a part of the external iliac vein was probably due to secondary inflammation, for the walls of this vein had been perforated by ulceration and an abscess had resulted therefrom, which was filled with a brownish-coloured and very fetid purulent matter. Through this opening in the vein-wall free communication between the cavity of the abscess and the calibre of the vessel was allowed; and thus the contents of the abscess had been stained with decomposing blood, and had acquired a brownish hue. One object to be attained by ulcerative perforation of the vein-wall, in cases such as the foregoing, may be the escape of decomposing puriform matter from its prison within the vessel, into the common-connective tissue. In my opinion, the pelvic abscess described above had such an origin. I also remember another case of a similar nature. In it several small superficial abscesses presented themselves on the forearm in the track of the median vein, which I thought, at the time, to have resulted from thrombosis and puriform softening of the clot in that vein. The abscesses were treated by incisions and poultices. After some considerable time they healed and the patient recovered. Virchow also informs us that, in cases of peripheral thrombosis, an abscess may form in consequence of peri- or meso-phlebitis. By the terms meso- and periphlebitis he doubtless means inflammation

occurring in the substance of the walls, and in the sheaths of, or in the connective tissue external to, the veins. Such an abscess is generally circumscribed or local in its nature, as, for example, it was in the cases mentioned above.

The clinical history of our case is also very interesting. The patient exhibited undoubted signs of blood disease before thrombosis occurred. He was very pale (*i. e.* anæmic and leucocythæmic) before any symptoms of thrombosis appeared. Certain glands which are concerned in the formation of the blood, namely, the spleen and many lymphatic ganglia, were considerably diseased. The anæmia and leucocytosis constituted the first step in his downward career. As soon as that was taken he became a fit subject for pyæmia and thrombosis. The pyæmia was quite chronic, and consisted of two paroxysms which were, in some measure, distinct from each other. Was not the last paroxysm due to a fresh infection of his system produced by the pelvic abscess? Besides these calamities the patient got parenchymatous hemorrhage when near his end. But on the last-named topic we can speak to better advantage on a future page.

The first pyæmic invasion was arthritic in character, that is, it was attended with the occurrence of pain, stiffness, soreness, and swelling in many joints. Like the rheumatic and the gouty poison, the pyæmic poison in this case exhibited a decided preference for certain structures which enter into the composition of joints. It is also probable that this attack of pyæmia began before the thrombosis started, and that the pyæmia preceded the thrombosis in this case as it did in the last. The clinical phenomena presented themselves in the following order: 1st came those relating to anæmia and leucocytosis; 2d, those belonging to pyæmia with an arthritic tendency; 3d, those referable to peripheral thrombosis; 4th, a fresh attack of pyæmia; 5th, parenchymatous hemorrhage; and 6th, death.

*CASE IX. Primary amputation of the thigh for gunshot injury; suppurative osteo-myelitis occurred in the stump-bone; death on 30th day, from pyæmia; autopsy; secondary abscess in the lungs; thrombosis of the femoral vein with puriform softening of the clot.*—Private R. W. L., Company "F," 6th Maine Vols., aged 28, of sound constitution, was wounded by firearms in battle near Fredericksburg, Va., May 3, 1863, and had his thigh primarily amputated, by the circular method, at the junction of its middle and inferior thirds, for that cause.

*May 8th.* Was brought to the Stanton U. S. Army General Hospital from the front; general condition of patient good; directed a water dressing to be applied to stump.

*11th.* Restless and complains of pain in the stump; pulse 104 and full; prescribed pulv. ipecac. comp. gr. v, et camphor. gr. j, ter in die sumend.

*15th.* Stump suppurating freely; pulse 90; tongue coated; appetite poor; bowels confined; prescribed ol. ricini fʒj, and allowed him to have milk-punch.

*21st.* Appetite continues poor; ordered to take quinix sulph. gr. ij, in solution, three times a day, and to continue the milk punch.

24th. Restless and again complains of pain in the stump; tongue coated and bowels confined; prescribed hydrarg. cum creta et pulvis rhei,  $\text{ũĩ gr. x}$ , to be taken at once; to have milk-punch and eggs for extra diet.

25th. Stump pain continues, and is referred to the bone by the patient; the stump is also swelled, and the discharge from it diminished in quantity; skin tinged slightly yellow; the diagnosis of osteo-myelitis in the stump is affirmed; prescribed elixir vitriol,  $\text{gtt. x}$ , to be taken with the quinia.

28th. General condition better; tongue and skin moist, but bone-pain continues in stump.

29th. Passed a very restless night; bone-pain in stump increased, and is now very severe; has mild delirium, dyspnœa, and cough; prescribed potass. iodid.  $\text{ʒj}$ , dissolved in aqua camphoræ  $\text{ʒĩv}$ , and directed a table-spoonful to be taken every six hours, together with porter, and any nutriment he may desire.

30th. Delirium increased; pulse rapid and feeble; granulations have sloughed off from the end of the bone in the stump, and pus is now seen oozing from the marrow there.

31st. Still worse; has profuse perspirations; pulse 130, quick and feeble; tongue dry and brown.

June 2d. Died at 6 o'clock A.M., of pyæmia.

The autopsy showed that the medullary tissue in the canal of the stump-bone was inflamed; that it had a dark-red colour, an increased consistence (sclerosis), and contained a large number of isolated abscesses which varied in size from a pin's head to a pea; that suppuration was also going on among the muscular structures of the stump; that the orifice at the end of the femoral vein was not closed; that the femoral vein itself was empty and considerably shrunken in calibre from the end up to the first valve; that above this valve it was filled to distension with a dirty-looking ash-colored semi-fluid substance, which resembled pus, for a considerable distance, or, in other words, that thrombosis with puriform softening was present in the femoral vein; that there were about a dozen secondary abscesses in the superficies of the lungs (both); that these pulmonary abscesses varied in size from a pea to an almond; that the kidneys appeared to be fatty, and, finally, that the liver and spleen were normal.

We shall withhold our comments on this case until the next one has been related, because they belong to the same category, and any remarks we may have to make are applicable to both alike.

CASE X. *Shell-wound of foot; secondary amputation of leg; suppurative osteo-myelitis in stump; pyæmia; death on the 18th day after operation: autopsy; secondary abscesses in the lungs and lobular pneumonia; veins of legs thrombosed.*—Private J. G. M., Company "L," 1st New York Artillery, aged 23, admitted to the Stanton U. S. Army General Hospital May 20, 1864, from the front, with a severe wound of the left foot; he said that the wound was inflicted on the 18th, by the explosion of a shell, in the Wilderness. On examination it was found that a large part of the heel had been torn off, and that the os calcis was much comminuted. On the 21st his leg was amputated by the double-flap method, while under sulphuric ether as an anæsthetic. He lost but little blood, and did not sustain much shock from the operation. He reacted promptly after it, and was then placed on the following plan of treatment, namely, tonics, nutrients, and alcoholic stimulants were to be administered, and simple dressings were to be applied to the stump.

He died, however, on the 8th day of June, of secondary or pyæmic pneumonia.

The *autopsy* revealed suppurative inflammation of the marrow in the stump-bones, both of them being involved; thrombosis of the veins of the legs; secondary superficial abscesses in both lungs, and lobular pneumonia.

*Comments.*—The last two cases furnish examples of thrombosis occurring in connection with suppurative osteo-myelitis. According to my own experience this disease not unfrequently leads the blood to coagulate in the veins proceeding from or corresponding to the bone or bones which happen to be its seat. I have found osteo-myelitis in all stages complicated with thrombosis at least six times in fifty-one cases, that is, in about 12 per cent. of them, and it may have been present in several more.

In both of these cases the lungs were found to contain many so-called metastatic or secondary abscesses, on post-mortem examination. Like Cases VII. and VIII. these patients died of pyæmia, but, unlike them, the secondary foci in these subjects were developed in the lungs instead of the joints or intermuscular connective tissue. In both of them the pyæmic poison seems to have had a special affinity for some substance which enters into the composition of the pulmonary tissue, and, in consequence thereof, gave rise to numerous intralobular inflammations in the lungs, instead of exciting the inflammatory process in other structures of the body. It may, however, be said in objection to this hypothesis that the secondary abscesses of the lungs which were found in at least one of these cases, namely, Case IX., may have resulted from embolism of the pulmonary artery, the embolia having come from the softening thrombi which were found in the femoral and iliac veins in that case. Well, it is possible that these abscesses did result from this cause, but it is no more probable that they were produced in this way than that they were produced by the direct action of the pyæmic poison on the pulmonary tissue; for, in the case next to be related, it will be found that, although the lungs contained many secondary abscesses, they could not have been produced by embolia derived from softening thrombi, because the thrombi were all quite recent and freshly formed, *i. e.*, not softened, and the pulmonary lesion was obviously of an older date than the thrombosis. If in the latter case the secondary abscesses in the lungs were not due to embolism of the pulmonary artery, they certainly may not have been due to that cause in the former case, although the femoral and external iliac veins did contain softening thrombi. According to my own experience, the relation which exists between secondary foci in the lungs and the phenomena of pyæmia in general on the one hand, and thrombosis on the other, is neither constant nor uniform, but only accidental, and therefore we ought not to look for the proximate causes of pyæmia in that direction. We shall, however, take up and more fully consider this important topic at another time.



**CASE XI.** *Secondary amputation of thigh for gunshot injury of knee-joint; death from pyæmia 13 days after operation; autopsy; gangrenous osteo-myelitis of stump; recent thrombosis of profunda, superficial femoral, and external iliac veins; extensive adenitis in same parts; numerous secondary abscesses found in the lungs and patches of lobular pneumonia.*—Wm. L. S., private, Company "I," 5th North Carolina Infantry (Confederate), aged 24, was admitted into the Stanton U. S. Army General Hospital May 13, 1864, with a gunshot wound of the left knee-joint, received May 9, in battle near the Wilderness, Va. The ball entered anteriorly near the inner side of the patella, and escaped posteriorly about three inches below the bend of the knee, having grooved the internal condyle of the femur in its course.

At time of admission to hospital the knee-joint was already much swelled and inflamed. His constitutional state was also bad. He was pale (anæmic), feeble, and had irritative fever of a low type. Ordered the ice-dressing to be applied to the wounded joint, and nutrients, together with tonics and stimulants, to be administered internally. The following tonic and stimulating mixture was prescribed: *R.* Tinct. ferri muriat. ℥ij; spiritus frumenti, fOj. *M.* One ounce to be taken every three hours.

*May 18th.* Has not improved, but, on the contrary, is constantly getting worse. His knee-joint is greatly swelled and very painful. The inflammatory swelling is rapidly extending down his leg. Has a good deal of irritative fever; skin hot and dry; pulse frequent and irritable; he is considerably prostrated and very restless. Anæsthesia having been produced with sulphuric ether, the thigh was amputated in its lower third by the double-flap method. Only about four ounces of blood were shed by the operation. A good deal of shock, however, was produced by the operation, and reaction came on but slowly. When the effects of the anæsthetic had passed away, the following mixture was prescribed: *R.* Ferri et quiniae citratis, ℥iiss; spiritus frumenti, fOj. *M.* One ounce to be administered every three hours. He was also directed to take opiates in sufficient quantity to keep him free from pain, and to have his strength sustained with nutrients, such as essence of beef, eggs, etc. The knee-joint contained about six ounces of purulent fluid.

*26th.* There is no improvement; stump shows no disposition to heal; he has anorexia with great debility; and we are compelled to administer alcoholic stimulants in any form that may suit his fancy; he is restless and expresses a desire to die; mind clear; pulse averages 130; tongue dry; stomach irritable. The stump-bone protrudes and the discharge is ill-conditioned. Ordered the following lotion to be applied to his stump: *R.* Potass. permanganat. ℥iv; aquæ fontanæ, fOij. *M.* During the next three days he continued to grow steadily weaker.

*30th.* Is sinking rapidly; has considerable dyspnœa and the respirations are hurried; the discharge from the stump is very offensive in smell; he refuses to take food and stimulants in any form.

*31st.* He continued to sink, and died to-day of pyæmia. He did not have any chills, and his skin did not acquire an icterode hue. In these respects his case differs from most other instances of pyæmia with secondary foci which have come under my observation.

*Autop-y.*—The lower end of the stump-bone was denuded of periosteum for about half an inch above its sawn extremity; and this membrane, still higher up, was loosened more or less for the space of an inch, but not detached. There were no deposits of new osseous tissue on the exterior

of the stump-bone, and no products of reparative action at the sawn end of it. The medullary tissue in the canal of the stump-bone had a dark, reddish-brown colour, and a very offensive gangrenous odour, through a section about half an inch thick situated at the lower end. Above this gangrenous part the marrow presented centrally a yellowish-gray colour through a space one inch in length. At the circumference of this yellowish-gray part, the medullary tissue which lay in contact with the internal laminæ of the bone had a dark-red colour, extending to the depth of one or two lines. Above this yellowish-gray part the marrow presented a reddish-yellow colour in its interior, but its exterior, which came in contact with the osseous tube, had a bright-red colour extending to the depth of two or three lines, and looked like fresh granulations; from this "red inflamed" tissue numerous minute vessels were seen shooting into the interior of the marrow and forming networks therein. A section of the stump-bone four inches long was examined. The medullary tissue was exposed to view by splitting it lengthwise with a saw.

The profunda, the superficial femoral, and the external iliac veins, leading from the stump, were all filled with recently coagulated blood, *i. e.*, with a fresh thrombus. When viewed externally, after exposure by dissection, they presented a dark-blue colour, and, opposite their valves, a knotted appearance.

The lymphatic glands of the groin on that side, and the chain of lymphatic ganglia which accompanies the external iliac vein, were much enlarged in consequence of inflammation.

The end of the femoral artery in the stump was slate-coloured and softened to the extent of one inch, and this part appeared about to slough off. The tube was, however, firmly occluded or obliterated at the junction of the sloughing with the sound part of the vessel.

The exterior of the lungs contained about a dozen small superficial abscesses, and the interior numerous patches of lobular pneumonia. The abscesses were grayish-yellow in colour, and surrounded by a dark-red areola of inflamed pulmonary tissue.

The liver was not enlarged, but buff-coloured, fatty, and very soft. The spleen also was not enlarged, but paler than usual in colour and very soft. The cortical portion of the kidneys was red and injected. The pyramids were pale but well defined.

*Comments.*—In this case secondary amputation of the thigh was followed by pyæmia, which in turn occasioned death. At the autopsy many secondary abscesses were found on the exterior of the lungs, and numerous patches of lobular pneumonia in their interior. The veins of the amputated thigh and groin were shown to be filled with freshly clotted blood, and the stump-bone to be the seat of gangrenous osteo-myelitis. But the morbid process in the lungs was obviously of an older date than the morbid process in the veins. The formation of the secondary abscesses in the lungs doubtless commenced several days before death, while the blood coagulated in the veins during the last few hours of life. The production of the secondary abscesses in the lungs, therefore, cannot be ascribed to thrombosis, and to account for their origin we are compelled to invoke the hypothesis that they were occasioned by the pyæmia, *i. e.*, by some morbid influence of a peculiar character which the pyæmic poison exerts upon the

pulmonary tissue. Most certainly the pyæmic phenomena which presented themselves in the case, as also the secondary abscesses and the lobular pneumonia, cannot justly be attributed to the thrombosis, but, instead thereof, the formation of coagula in the veins may, at least to some extent, be ascribed with propriety to the influence of the pyæmia itself.

Concerning the gangrenous feature of the osteo-myelitis which was observed in this case, all we need say here is that the medullitis did not become gangrenous until near the close of life, that the pyæmia was much older than the gangrene, that the secondary abscesses in the lungs were also older than the gangrene, that neither the pyæmia nor the pulmonary abscesses were induced by the gangrene, and that the gangrene itself was probably occasioned by the debilitated state of the patient and the poisoned condition of his blood.

With regard to the morbid state of the blood which obtained in this case, we should bear in mind while attempting to account for it, that the spleen and many of the lymphatic glands were seriously disordered; that in all probability much leucocythæmia had been produced by the disease of these glands before the thrombosis began, and that the thrombosis itself may have been largely due to the leucocythæmia.

Besides this case, the writer has seen several others, in which pyæmia with secondary abscesses in the lungs became complicated with thrombosis of the veins proceeding from the wounded part, just before death occurred, and therefore the foregoing case must not be considered as an isolated one in this respect.

CASE XII. *Primary amputation of right leg at upper third for gunshot injury; suppurative osteo-myelitis of stump; pyarthrosis of knee; thrombosis of the crural veins with parenchymatous hemorrhage from the stump on the 12th day; death from pyæmia on the 15th day; autopsy; diagnosis as to the cause of the hemorrhage, etc., verified.*—Private J. H., Co. "A," 32d Massachusetts Vols., aged 49, was admitted to the Stanton U. S. Army General Hospital from the field, May 18, 1864. His right leg had been amputated, about four inches below the knee-joint, by the antero-posterior flap method. He stated that the operation was performed on the 12th, for gunshot fracture of both bones of the leg, with much destruction of the soft parts, which had occurred in the battle of the Wilderness on the 11th. He also stated that he was in good health at the time of operation.

May 20. He had retention of urine. Stump swollen and painful. It also had sloughed badly up to where the bones were sawed off.

22d. Thigh also now swelled and painful. Pulse frequent and feeble; skin hot, tongue dry and brown; he is much debilitated; has also diarrhœa and pyæmic chills.

23d. Parenchymatous hemorrhage occurred from the stump, and he lost about six ounces of blood before it was arrested. He is still more debilitated. He sweats profusely, and has rigours occurring at irregular periods. His skin is assuming a sallow hue. The superficial veins of the swollen thigh are enlarged, blue-coloured, and unusually distinct, from which it is

inferred, in connection with the other features of his case, that the femoral and popliteal veins are obstructed by thrombus. He died on the 26th, of exhaustion induced by pyæmia.

*Autopsy.*—The post-mortem examination of the limb confirmed the diagnosis. The medullary tissue of the principal stump-bone (tibia) was inflamed and suppurating. The cancelli of the spongy structure of the upper end or head of the tibia contained some dirty-looking, ill-conditioned pus. The knee-joint contained about four ounces of fetid pus. The internal organs or viscera were not examined.

*Comments.*—Not long after the operation this man's general health began to suffer. He felt weak and lost his appetite. He grew worse; soon the flaps began to slough and he was seized with irritative fever. Then the symptoms of pyæmia quickly appeared, and afterwards the phenomena of thrombosis. The clinical history of this case clearly shows that of these affections pyæmia was the primitive one. The clinical history also shows that the thrombosis was preceded by serious disorder of the blood.

Furthermore, the thrombosis gave rise to the following symptoms, namely, œdematous swelling of the stump and thigh, dilatation of the subcutaneous veins of these parts (they appeared enlarged, blue-coloured, and unusually distinct), and parenchymatous hemorrhage. These symptoms all resulted from the deep-seated veins of the thigh and ham having become plugged up with clotted blood. These symptoms were so well marked that an opinion was easily formed as to the nature of the lesion which had produced them, and the diagnosis was fully confirmed by the autopsy.

The parenchymatous bleeding which occurred in this case, and likewise in Case VIII., constitutes, when present, a very important sign of thrombosis. On this point Stromeyer remarks: "The parenchymatous hemorrhages are, as I have found, and will elsewhere prove by facts, at once a symptom of the entrance of pus into the veins and of the stoppage of the larger veins by coagulation. The stagnation of blood thereby ensuing gives rise to hemorrhage from the capillary vessels lying free in the wound, and on this account the blood so lost has neither a decidedly venous nor arterial character. Nevertheless, I will not assert that parenchymatous hemorrhages, independent of stagnation in the veins, and similar to scorbutic bleedings, are not met with from the surface of wounds. (Vide *Statham's Stromeyer*, p. 15, Am. ed.) When, however, Stromeyer supposed that pus entered the veins from suppurating wounds, he was mistaken, for we now know that pus is never absorbed in the form of pus; but he was correct in ascribing parenchymatous hemorrhage to occlusion of the main veins with coagulated blood; and, although this is not the only form of parenchymatous bleeding, it is the one which occurs most frequently, and possesses most importance. Oftentimes it gives the surgeon much trouble to restrain it, and not unfrequently it causes so great a loss of blood as to prove fatal. Several cases of this sort have been seen by

the writer, but he defers the relation of them to another occasion. In parenchymatous hemorrhage the blood issues from the bleeding surface, by exudation, as it were, and not in distinct streams. In colour it is not so dark as venous, nor so bright as arterial blood. This circumstance also was first pointed out by Stromeyer, as mentioned above.

**CASE XIII.** *Gunshot fracture of right humerus; excision of the fragments; convalescence very slow; the whole limb much tumefied with a peculiar white œdematous swelling for a long time; thrombosis extending to the axillary vein in all probability occurred, and thus seriously complicated the original lesion.*—J. E., 2d Lieutenant Co. "C," 2d U. S. Calvary, aged 27; admitted June 4, 1864, into the Stanton U. S. Army General Hospital; was wounded in the battle of Coal Harbor, Virginia, June 1st, by a conoidal bullet which entered the anterior surface of his right arm, about the junction of its upper and middle thirds, fractured the humerus with comminution and lodged beneath the integuments on the opposite side of the limb. He was taken to a field hospital and operated on the same day. An incision about four inches in length was made along the outer border of the biceps muscle, and several large fragments of bone, together with the ball, were said to have been extracted. His general condition was excellent.

On admission to hospital the sutures were removed and the wound of operation explored. The ends of the fractured shaft were found to be rough, and about three inches apart. The limb was then placed in a comfortable position on a well-padded angular splint, and the patient was ordered to keep his bed. Ice-dressings were applied to the wound, saline cathartics administered from time to time as the condition of his bowels indicated, for they were generally confined, and stimulants with a nourishing diet allowed. On this plan of treatment the wound did well, *i. e.* it discharged a cream-like pus, and was granulating satisfactorily until the last of June, when it began to slough. At the same time he lost his appetite, then got irritative fever, and failed rapidly. The treatment consisted in the administration of stimulants, tonics, nutrients, and opium internally, and the application of strong nitric acid to the sloughing surface. When the phagedæna ceased to spread, the sore occupied a space some five inches in length by three in breadth. It was now dressed with a weak solution of the permanganate of potassa. Constipation continued to be a prominent symptom, and enemata were usually employed to relieve it. By the second week in July the slough had all separated, and the sore presented a pale-red, flabby, granulating surface. The hand, forearm, and arm were extensively involved in swelling of an œdematous nature, and presented a peculiar white, semi-transparent, or wax-like appearance. The tumefaction was very great, and extended up to the shoulder, so great, indeed, that the limb was fully twice as large as natural. This swelling was attributed to thrombosis, and the veins of the arm, together with the axillary vein, were believed to be extensively obstructed with coagula. He was emaciated, and his countenance was very pale or anæmic. The swelling showed but little inclination to subside, and the wound but little disposition to heal. No other part of his body, however, was tumefied or showed signs of local disease.

During this stage, the pus showed a marked tendency to burrow among the muscles about the wound, and, at different times, several abscesses presented themselves on the outer side of the arm. They were promptly

emptied by incision. The supporting plan of treatment was continued, and unguentum resinæ on lint was applied to the sore as a dressing. His appetite improved, and his general condition became much better under this treatment, but the limb remained much distended with the œdematous infiltration above described, the sore much paler than natural, the granulations weak, the edges puffed up with œdema, and requiring frequent scarification on that account.

*October 14.* He continues slowly to improve. The lower three-fourths of the sore are now healed. A narrow sinus which communicates with the bone at the place of fracture discharges a laudable pus. The tumefaction of the limb is greatly reduced, but there is still considerable œdematous swelling in every part of it, and especially in the forearm and hand, although more than three months have elapsed since thrombosis occurred. He has but little or no pain, and has not had much of it at any time.

*28th.* The arm is now improving more rapidly, but the œdematous swelling has not yet entirely disappeared. His general condition is also much better.

At this point in the history of this very interesting case the writer was transferred to another sphere of duty, and thus lost sight of his conclusion. It is, however, believed that the patient ultimately recovered.

*Comments.*—This officer seemed likely to make a speedy recovery until his wound was attacked with phagedæna, although his countenance was beginning to assume an anæmic or leucocythæmic appearance. The phagedæna first showed itself about three weeks after he was wounded; and about two weeks later still the symptoms of thrombosis appeared. These symptoms consisted essentially of a peculiar tumefaction, involving the wounded limb, which could not be satisfactorily accounted for by any hypothesis, except that its veins were obstructed with coagula. It is probable that these coagula had their starting-point in some of the minute veins connected with the sloughing part, and that they afterwards prolonged themselves upwards into the large veins, by a process which we have described with sufficient fulness on another page. It is worthy of particular remark, that thrombosis did not occur until his condition had become decidedly anæmic or leucocythæmic, and until his wound had been attacked with phagedæna.

Again, the deleterious influence which the thrombosis exerted upon this patient's recovery was about as strongly marked as the symptoms themselves which it produced. While the œdematous tumefaction persisted, his wound was very slow to heal, and thus his recovery was greatly retarded. Moreover, his convalescence was rendered not only very tedious, in consequence of the thrombosis, but also full of danger. For a long time he looked very pale, almost bloodless, and remained very weak. For a long time, we every morning expected to find him attacked with pyæmia, and the last hope of saving his life destroyed.

*CASE XIV. Gunshot fracture of right thigh near junction of upper and middle thirds; bullet lodged; some time afterwards œdematous swelling with painful sensations, phlegmasia alba dolens, occurred in*

that limb; it was doubtless occasioned by thrombosis of the femoral vein and its tributaries; the patient slowly recovered—Private H S, Company "I," 5th New Jersey Vols., æt. 19, was wounded in battle at Chancellorsville, May 3, 1863, by small arms, sustaining thereby a compound comminuted fracture of the right femur, near the junction of its upper and middle thirds. The bullet entered the thigh from behind and just below the gluteal fold. There was no orifice of exit. He was treated in the Field Hospital at Potomac Creek until June 15, when that place was evacuated. He was then brought to the Stanton U. S. Army General Hospital on a bed, the injured limb being propped up or held steady with a long sand-bag placed on each side of it. The fracture had already united by a soft callus. It was also discovered that the lower end of the upper fragment was tilted forwards by the action of the psoas magnus and iliacus internus muscles so as to form an obtuse angle with the lower fragment at the place of fracture. The wound was still suppurating, and the bullet not extracted. Treatment: The limb was placed in Hodggen's cradle-splint, water-dressings applied to the wound, and a full diet with porter allowed.

*July 15.* Wound is still open and suppurating. He complains of pain in the foot; also of numbness in the leg, and the circulation in these parts is considerably embarrassed. The blood stagnates in the whole limb, but especially in the lower part of it, and there is much swelling of a white, watery, or œdematous appearance extending from the toes up to the groin.

*20th.* Pain in foot and œdematous tumefaction of limb remain the same, but there is total loss of sensibility in dorsal surface of foot. Pulsation in the anterior tibial artery is normal, but it can scarcely be felt in the posterior tibial artery, possibly on account of the swelling. The temperature of the foot is good. He is quite pale (anæmic) and rather weak, but otherwise his general health is good. The limb was taken out of Hodggen's apparatus to-day, and a starch bandage applied so as to enable him to leave his bed.

*23d.* Pain and swelling continue unchanged. He complains of loss of appetite and a feeling of malaise. Prescribed quinia sulph. gr. ij, elixir vitriol, gtts. x, ter in die sumend; also spiritus frumenti, fʒiij, quotidie.

*28th.* General condition improved; fracture firmly united.

*Aug 1.* Goes about on crutches, but the swelling of the limb continues undiminished.

*Sept. 8.* The bullet (a conical one) was discharged from the aperture of entrance by suppuration to-day; condition of foot about the same; œdematous swelling of limb slowly abating. His general health is now good, and he has fair use of the member. Amount of shortening  $3\frac{1}{4}$  inches.

*25th.* He received a furlough for sixty days. The wound is now completely healed, but the swelling is not yet entirely gone. The other limb has not at any time been swelled.

*Jan 10, 1864.* He was discharged from the service on surgeon's certificate of disability. At that time he walked pretty well with the aid of a cane. No fragments of bone were discharged while he was in the general hospital.

*Comments.*—This patient did not get an œdematous swelling of his broken limb, which was of high degree and extended from toes to groin,

until his strength had become much diminished, his countenance pallid, and his condition decidedly anæmic. Thus, in this case also we find that the thrombosis was preceded by a disordered state of the blood itself; and this circumstance is important, because it aids in clinically demonstrating that thrombosis never occurs when the blood is in a healthy state.

Moreover, the obstruction of the femoral vein and its tributaries with coagula caused the cure of this patient to be much delayed.

*CASE XV. Simple fracture of right femur in middle third; union with five-eighths of an inch shortening; subsequently, however, the shortening increased very much from the operation of constitutional causes; ulceration with extensive and persistent œdema of the leg occurred; thrombosis believed to have been present.*—Private T. S., Co. "A," 1st Regt. Maryland Artillery, aged 30, admitted to Stanton U. S. Army General Hospital, September 25, 1863. He had received a simple oblique fracture of the right femur in its middle third, by being thrown from his horse three days previous, Sept. 22, in action near Madison C. H., Va. He was treated by counter-extension, made with a perincal band, and extension with a pulley-weight and cord, the latter being attached to the limb by suitable strips of adhesive plaster, applied to and extending up the leg.

Nov. 15. The fracture has united firmly, with very little shortening ( $\frac{5}{8}$  of an inch).

Dec. 28. Left the hospital on furlough, for sixty days.

Feb. 28, 1864. Returned from furlough in bad condition. States that, about four weeks after reaching home, he noticed several small sores, or ulcers, on his right leg; that, soon afterwards, his right foot and ankle began to swell; that the swelling (œdema) gradually increased and spread upward till it reached the knee. It also appears that, at the same time, the affected limb gradually became shortened, from softening and absorption of the provisional callus. When he returned to hospital, Feb. 28, as mentioned above, this limb was found, by careful measurement, to be  $2\frac{3}{4}$  inches shorter than the sound one. The union, however, appeared to be firm. There were five scorbutic-looking ulcers on the leg, and numerous spots having the appearance of purpura. The limb was swollen and œdematous as high as the knee. His gums were pale, spongy, ragged, and detached from the teeth. There was a copious deposit of black material on the teeth. His skin had a "muddy" hue, and he complained of vague pains in different parts of the body, but especially in the back.

*Treatment.*—On account of the swelling and ulceration of the leg, no attempt could be made to lengthen the limb by applying extension. He was placed on a full diet, with a liberal allowance of fresh vegetables, and the chlorate of potassa was administered in full doses. Under this treatment his general condition readily improved. The œdematous swelling of his leg, however, was very slow to yield. The ulcers also were very slow to take on reparative action. No tumefaction occurred in the other limb.

May 3. He was transferred to Philadelphia, Pa., doing well, but considerable swelling of an œdematous character still remained in his leg, and the ulcers were not yet soundly healed. For a part of the notes relating to this case I am indebted to Dr. George A. Mursick, late Assistant Surgeon U. S. Vols.



*Comments.*—The peculiar and persistent tumefaction which occurred in his right foot and leg, and in no other part, makes it pretty certain that the corresponding crural vein and the tributaries thereof were obstructed with thrombi. This swelling was obviously due to some local cause; and we are not acquainted with any besides the one just mentioned, or thrombosis, that is capable of accounting for all the phenomena which this swelling presented. According to the patient's statement, as to his symptoms, the thrombosis occurred early in February, 1864, more than four months after he was injured, and more than one month after he left the hospital on furlough.

Again, it is by no means certain that this man had scurvy. His gums were not dark-colored, but pale; they did not bleed when touched, and on other slight provocation, while the ulcers and purpuric spots on his right leg can be accounted for on the thrombus hypothesis. He was undoubtedly suffering from chronic malarial intoxication. Nearly all the soldiers in the Army of the Potomac, and especially those of them who saw much service in the field, suffered from malarial poisoning, some proving much more susceptible than others to the subtle influence of so-called marsh miasm. From the disturbing influence exerted by malaria on the spleen and other blood-glands, the white corpuscles, together with the pigment matter, were considerably increased, and he acquired a peculiar form of anæmia, or, speaking more exactly, of leucocythæmia, which fully accounts for the muddy hue of his skin. The disordered state of the blood thus acquired accounts also for the softening of the provisional callus, with the shortening of the limb that followed it, and for the occurrence of crural thrombosis.

*CASE XVI. Thrombosis of the veins of the hand and wrist, complicating the treatment of a "silver-fork" fracture of the left radius; recovery.*—Mrs. L., a tall, well-formed, healthy-looking widow, aged about 58 years, and by occupation a dressmaker, slipped on the ice and fell down, on the morning of Dec. 24, 1870. She struck the ground with the palm of her left hand, and sustained thereby a fracture in the lower part of the radius, near the wrist-joint. She came to me almost immediately afterwards. The deformity which characterizes "Colles's fracture" was present in a marked degree; also, crepitus and an abnormal point of motion were detected in the lower end of the radius, on close examination. Her fracture was reduced forthwith and splints applied in accordance with what is known as the Bellevue Hospital plan. An accurate coaptation of the fragments was obtained, and she did remarkably well until January 19, 1871.

On the morning of that day she came to me with her hand greatly swollen, and presenting a white, dropsical, or œdematous appearance. On removing the fracture dressings, I found that the tumefaction was confined to the hand and wrist; that the forearm and arm were entirely free from it, that the swelling was not only great in quantity, but also very painful in character; that it likewise seemed to be rather warmer than natural to the touch, and that its appearance was entirely œdematous or like that of

a local anasarca. In short, the exceedingly painful œdema of true phlegmasia alba dolens had attacked her hand and wrist. It had come on suddenly during the preceding night, and deprived her of sleep, she said. The dressings were readjusted, but not tightly, an anodyne lotion was applied to her hand, and we resolved to await the course of events. On the 23d the dressings were again adjusted, and her hand was painted with tincture of iodine. On the 28th the splints were removed entirely. The phlegmasia alba dolens of her wrist continued about the same.

This swelling was not immediately due to compression of the limb, nor to any interruption of the circulation of the blood which resulted directly from the snugness of the dressings, because they were no tighter than they had been all the while before the swelling appeared. Moreover, the swelling did not subside, nor, indeed, did it sensibly diminish in quantity, on the removal of the splints. It lasted for a long time afterwards, and but gradually disappeared. Thus the thrombosis proved to be a painful and otherwise troublesome complication of the original injury.

So far as the fracture was concerned, the result was very good, for union was obtained without the concurrence of any deformity that could be perceived.

62 East 12th Street, July 10th, 1872.

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ART. III.—*Successful Treatment of Asthma.* By EDGAR HOLDEN, M.D.,  
of Newark, N. J.

THAT man is indeed presumptuous who in the present advanced state of medical science dares to advance a theory or propose a remedy without facts to support his conclusions, and it is with respectful deference to the many eminent men who have written upon or personally suffered from asthma, the affliction to which Willis justly applied the term *morbus maxime terribilis*, that I present the following remarks. The theory touched upon is, however, not a new one, and the remedy, although perhaps never before systematically applied in this disease, is not an untried or unfamiliar one.

It is a matter of painful curiosity to read over the long list of remedies and the many theories that have been advanced concerning asthma, even since the days of Sir John Floyer, who himself suffered for 30 years, and died at the advanced age of 80, and to observe in how narrow a circle run the limited means that have brought relief. Only one really marked discovery seems to have occurred for centuries in its history, and this its tetanoid character and the actual location of spasm in the muscular structure of the bronchiæ by Willis, and the demonstration of the circular fibres themselves by Reisseissen. (*Ueber den Bau der Lungen*, Berlin, 1822.)

Its frequently reflex character is, however, sometimes referred to in old

writings, but the discovery of the actual nature of the disease and the definite certainty that in every case of true asthma an actual spastic contraction does exist, has been the source of all the relief that has thus far come to the tortured asthmatic, since, while it may not as yet have been followed by the discovery of the remedy that could be called a specific, yet it has determined the *class* of remedies from which relief could be probably obtained, and, with the light afforded by the modern discoveries of reflex and inhibitory nerve functions, has already given a key to successful treatment.

It is most generally conceded that whatever be the precise character of the attack, whether due to direct or reflex irritation, the essence of the affection is *spasm*, and although there may be, at rare intervals, cases dependent upon a minus rather than a plus state of contractility (Walshe) of the muscular fibres of the bronchiæ, such cases, admitted because of high authority, are but the exceptions that strengthen and support the rule. This characteristic feature of true asthma is most lucidly described by Jones (*Nervous Disease*, p. 396), as a tetanoid condition of the motor nerves of the bronchial tubules, the centres excited being rather those of the spinal than the encephalic district.

With an affection thus clearly defined, adaptation of remedies from the wide field of the *materia medica* would appear a simple task; but unfortunately individual idiosyncrasy has proved a greater obstacle in this than in any other known disease, and the remedy that transports one to the seventh heaven by its almost miraculous powers fails to relieve another or casts him to a corresponding depth of misery.

Nor is this appearance of difference in action due to any simple confounding of cases alone, although it is probably true that no form of dyspnœa has escaped the title, and suffocative bronchitis, cardiac disease, and a variety of affections accompanied or characterized by dyspnœa are not infrequently huddled into a common group, and classified and treated by the hurried practitioner of medicine as asthma. It is undoubtedly the case, that this confounding of different affections under a common name, has done much to discourage the conscientious student and to establish the reputation of the disease for intractability; still the disease, *par excellence*, true asthma, rarely has proven the same as respects the influence of remedies, in any two individuals. Were this not the case, the discovery of its nature would have been the key to successful treatment. The fact, alone, that learned men have exhausted effort and failed even to gain for themselves relief, is evidence sufficient that science has been but a barren field. Floyer, Beau, Bree, and the late lamented Trousseau were its victims.

Even, however, to relieve some of the many who suffer, and to establish, as has been successfully done by W. T. Gairdner (*Edin. Month. Med. Journ.*, 1851) and H. H. Salter, hygienic rules by which attacks may be

warded off and prevented, is an achievement deserving the most grateful appreciation.

It is curious and instructive to review the list of remedies that have obtained some degree of prominence during the past one hundred years, and, as the treatment hereinafter proposed is more or less connected with some of them, a brief reference may be pardoned.

Thus, to make our selection in somewhat desultory and promiscuous manner:—

According to Eberle (Therapeutics), cobweb, in doses of 5 to 20 grains, was lauded as wonderfully successful, and a case thus treated is recorded in the *N. E. Med. Journal*, vol. iv. p. 218, by Dr. Webster, of Boston. It is said to have produced a species of tranquil exhilaration similar to that following the exhibition of nitrous oxide gas.

Dr. Jackson, of Boston, also details a case relieved entirely by a dose of 20 grains, by which the first tranquil sleep for six years was produced.

Narcotics, sedatives, and anæsthetics have naturally attained a prominent place in a disease so evidently indicating these classes of remedies, yet, with the exception of coffee and stramonium (both *datura* and *tatula*), conium, hydrocyanic acid, ether and chloroform, most of them have fallen into deserved disrepute.

Of antispasmodics and emetics, the former class, including musk, camphor, castor, valerian, *et id omne genus*, most have fallen far below expectations, and, but that the accepted theory of the affection were established, their lamentable failure would be most damaging to the faith of its supporters. With regard to emetics, relief has probably occurred to a greater number of sufferers from their use than from all other sources, and Dr. Salter, after an extended observation and experience, has in his later writings, given a high place to one above all others, viz., ipecac., tobacco and tartar emetic standing next in order.

Prof. Kuhn, of Philadelphia, advocated sulphate of zinc as an emetic, believing it to possess antispasmodic properties, an opinion not, however, subsequently concurred in by writers. Among tonics and alteratives may perhaps be most properly classed arsenic (Trousseau), strychnia, and cinchona (Niemeyer), as having become prominent amidst the many hitherto employed, and which have both outstripped and outlived the rest.

Dr. Bree lauded nitric acid and scilla; M. Beau sulphuret of potassium baths (86°F.), of twenty minutes' duration, both to relieve and prevent recurrence. (*Journ. de Méd. et Chir. pratique*, vol. xxxiii. p. 440.)

In Germany a remedy is said to be now much in vogue, made by dissolving sal ammoniac in lemonade. A combination of belladonna and iodide of potassium is variously attributed to Professor Niemeyer and Dr. Salter.

Galvanism has been employed and advocated occasionally, and Dr. Wilson, of Philadelphia, in 1816, presented to the Royal Society of London an elaborate essay on its use. Subsequent experiments have, however, shown it to be useless, and Prof. Salter says of it, "I have known it to do great harm, to 'aggravate the spasm,' and I have never known it to do any good."

Iodide of potassium in large doses and long continued has certainly proved of great value in eradicating the peculiar dyscrasia upon which the tetanoid contractility appears to depend.

*Dracontium fœtidum* may also be drawn from the olla podriga of remedies, as deserving more than its probable inheritance of oblivion, and the following prescription of Trousseau is worthy of record, though hardly commending itself for simplicity.

For ten days small doses of belladonna, frequently repeated; then ten days of turpentine; then ten of arsenical cigarettes, with sixty-grain doses of calisaya bark in coffee every ten days.

Of *external applications* that have survived the brief days of discovery and experiment, revulsives to the cervical spine over the part corresponding to the pharyngeal plexus, and first proposed by M. Ducros, of Marseilles, appear to have been the most satisfactory. It is probably to this gentleman, whose essay was read before the Academy of Science, in Paris, that the expedient of touching the fauces with aqua ammonia is due, rather than, as is commonly supposed, to Trousseau, who subsequently practised and endorsed it.

Finally, however, and chiefly, came the remedies used by inhalation, and from which much has been expected and much obtained.

First, perhaps, leaving the anesthetics, ether and chloroform, as having been already referred to, stands the smoke of stramonium, with or without tobacco and nitre paper. Of this latter and the secret of its action more will be said hereafter.

With the action of both these substances the profession is most familiar, and, indeed, few asthmatics have occasion to be advised with regard to them by any physician, to such an extent has a measurable success rendered them popular. Of more recent date is the use of compressed air, highly lauded by Prof. Niemeyer, and of which a writer (Sandahl) in *Schmidt's Jahrbuch* says, "the effects are a slowing of pulse and of respiration, a diminution of amount of pulmonary and cutaneous exhalation, also, with increase of urinary secretion and relief of congestion." Out of fourteen cases, all were improved, twelve had no relapse; and of seventy-seven with complicating emphysema and bronchitis, fifty-seven were improved, and twenty doubtful. (vol. exx. p. 178.)

From this remedy, however, little can be expected, inasmuch as it is only claimed that relief is afforded during a paroxysm, and the subsequent symptoms are in no wise mitigated or another attack at the usual hour averted.

It is, moreover, not readily available. The remedy was probably first suggested by Dr. Gent, in 1869 (*Arch. Gén. de Méd.*). Oxygen, hydrogen, and chlorine gases have enjoyed also a flattering reputation, only to fall into disuse.

Singular as it may seem, while almost every known medicinal substance has been called upon to do duty for this terrible affection, nitrogen, to which I desire to call the attention of the profession, seems to have been overlooked, and there appears no record of experiment with it, or its protoxide (nitrous oxide), and nitrons oxide saturated with medicinal vapors, as of conium or Calabar bean. Is it not a little curious to observe how this element enters into the composition of the means that usually relieve? For example, in an ordinary nitrogenized atmosphere, even when tainted with the additional odours of putrefaction—in the fumes from burning nitrate of potassa, in the vapours of nitrite of amyl or nitrous ether; and though, in view of the powerful influence of the active principle of the

substance, it may be a far-fetched deduction, it is nevertheless a singular fact that coffee, which will often completely relieve a paroxysm of asthma, does so only when taken in such a manner that its nitrogenous element, the legumen, is received in largest quantity. That this element, not usually an appreciated one in the beverage as we daily use it, is yet in reality one in condition to be readily assimilated, may be inferred from the fact that in Central Asia (*Organic Chem.*, W. A. Miller), where animal food is rare, coffee is used as asthmatics use it, and the nitrogenous constituents are found to be a substitute for those of a flesh diet. In tea, however, which we are accustomed to consider so similar to coffee from the analogy in the active principle of each, but which does not relieve asthma, the nitrogenous element remains in the leaves and is thrown away. Even were this not the case, however, the element is here more analogous to casein than that of coffee, and less digestible.

How far a purely nitrogenous diet would go to alleviate the paroxysm of asthma has probably never been ascertained, and would, indeed, be likely to fail, because provocative of indigestion, the most common excitant of a paroxysm.

Herein is also the explanation of a singular paradox with reference to coffee. In many cases, nothing seems more certainly to produce a paroxysm than this same beverage, yet it will always be found that when it does so the stomach is full of food difficult of digestion, and rendered simply more so by the coffee. Upon an empty stomach and in saturated infusion or in substance, it gives relief.

With reference to nitrite of amyl, which has recently attracted attention as the remedy for angina pectoris, and also from its singular properties as a remedy for asthma, much might be said.

(It is not intimated that the fact of its being a nitrite is the *sole* secret of its power, since, as Dr. Richardson has shown, other substances of the amyl series produce like results, particularly the iodide. The acetate and hydruret also possess similar properties.)

As it (the nitrite) is as yet a new remedy, comparatively little is known with regard to its action in asthma. In the few cases in my own experience in which it has been tried, it has seemed to be somewhat dangerous, as liable to excite congestion of viscera, more painful, and certainly more dangerous, than the disease itself.

Where any apoplectic or hemorrhagic tendency exists, its use would be clearly contra-indicated, and, although it undoubtedly resolves the spasmodic constriction of the bronchiæ, yet, as it renders turgid and swollen the capillaries of the body, and particularly of the brain, and checks oxidation, it should be employed with caution; so great and almost miraculous, however, appears its action (one or two whiffs from a small vial being often sufficient to relieve), it must be yet considered an invaluable remedy. It is to nitrogen, however, but chiefly to its protoxide, that I desire to call

attention. It would be a more singular fact that hitherto no systematic use appears to have been made of this gas in the treatment of an affection in which it is so clearly indicated, were it not that its apparently transitory influence seems to offer but a slight prospect of benefit, and foreign observers, to whom we must admit ourselves too often indebted for new remedies, are far less familiar with it than ourselves, and no recorded experiments have come to us from familiar quarters.

Indeed, until its introduction to the French Academy by Dr. Evans, an American dentist, at a comparatively recent date, its properties may be said to have been almost unknown to foreign medical observers. To show that its influence as an antispasmodic is not transitory, and especially that when passed through a sedative solution it will relieve the paroxysm of asthma and avert its return, with a success little influenced by individual idiosyncrasy, is the purpose of this article.

It is necessary, with this view, to revert to some of the peculiarities of the protoxide of nitrogen, as observed during an extended series of experiments, originally designed to ascertain the effect of its inhalation upon diseased lungs, and published some two years since in this Journal. Patients about to inhale the gas for extraction of teeth at the rooms of a prominent dentist, were examined indiscriminately before, during, and after the exhibition, and among these one peculiarity was found to be invariable, viz., in lungs however healthy, when the venous stasis had so far blocked up the pulmonary capillaries that the vesicular murmur was almost indistinguishable, the respiratory sounds, which had been growing gradually more and more sibilant and suggestive of a tubular structure, became suddenly free, clear, and peculiarly sonorous, indicating both a dense conducting medium and a total absence of constriction. After this was noticed in a multitude of cases (and the examinations were made daily for a period of several months), it was also observed that many who were wheezy and evidently asthmatic, and in whom the examination prior to inhalation revealed the orchestral admixture of sounds common to such condition, were immediately relieved, the breathing became free and clear, and often, for an hour after recovering consciousness, the bronchial tubes and air-cells seemed to be undergoing a process of rejuvenation.

As suggested in the essay referred to, this fact appeared the nidus of a discovery which might prove of great benefit, and has been, and it is hoped will yet be, to many sufferers. As already observed, the great difficulty in the way of its applicability as a curative agent, appears to lie in the transitory character of the anæsthesia produced; indeed, in some cases, one exhibition would often fail to produce any of the relief anticipated. In these, however, persistence and repetition were successful, and that a complete control of the nervous erethism could be obtained became evident upon the observance of another and singular fact, viz.:—

Many medicinal substances, often without regard to density, seemed to

impart their virtues to the gas and exhibit their effects upon the recipients; this being not only true of substances readily volatilized, but of mineral substances simply dissolved in the last of the series of wash bottles used to purify the gas.

Rochelle salt would not infrequently affect the bowels within two hours, and cannabis indica, conium, hyoseyamus, and belladonna were quite readily made to impregnate the oxide with their medicinal principles.

It is to be observed, that in all these experiments, and in numberless others repeated since, only the purest substances were employed. The nitrous oxide was generated from absolutely pure nitrate of ammonia, washed through a series of large jars, six in number, and contained in zinc gasometers, over water, and made fresh every day; and these points, particularly as to the purity of the ammonia and the kind of receptacle, are *essentials* in its successful application. How or why one ethereal substance like this should take up or hold properties foreign to itself, and yet retain its own anæsthetic power, it is not necessary to argue; *that it does*, is certainly sufficient to our purpose.

After the two facts thus enumerated, the question may be pertinent, why does the close, foul air of London prove so frequently a source of relief to the asthmatic, and why does the burning of paper saturated with nitrate of potassa also relieve? To say that in both cases the excess of nitrogen is the cause may be a sanguine deduction, it is at least not an improbable one. With reference to the latter, it is remarkable that the origin of a so popular and widely used remedy should be wrapped in obscurity, and that we are unable to award to its originator the meed of praise to which he is justly entitled. Its use, however, so general, as what is commonly called touch-paper, in connection with fireworks, may explain the discovery of its properties with relation to asthma.

How it relieves, is a more interesting question, and, if we analyze the process of combustion, the answer may appear. As is well known, nitre readily parts with its oxygen: heated to redness oxygen is expelled and a deliquescent hyponitrite of potash remains; by a still stronger heat both nitrogen and oxygen are given off, and potash and peroxide of potassium remain deflagrated, in connection with a nitrogenous substance, the nitrogen and oxygen eliminated are in a condition to form nitrous oxide, although contaminated with carbon and the acid products of combustion.

To nitrogen or its compounds may be attributed the singular effect upon some sufferers, produced by breathing the vapours arising from the slow decomposition of animal substances, the odours from stagnant cess-pools, and effluvia that would theoretically seem to be the very worst sources of danger. To this agency also may be due the influence of light from burning lamps, an interesting case of which is recorded by Trousseau (*Clin. Med.*, vol. i. p. 539.) In this case the patient was invariably relieved by



lighting five or six large lamps in his room, and thus rapidly exhausting the oxygen of the apartment.

Not to dwell longer upon theories, the following may be briefly said of the method adopted with the protoxide, after many experiments.

The gas, fresh and pure, is passed through a jar containing a fluid extract of conium, Calabar bean, or belladonna, according to the necessities of the case, and from this jar is inhaled by the patient, once daily, before retiring, and for four or five consecutive days, the quantity varying according to the condition of the patient, but not exceeding five to eight gallons, never to anæsthesia, the sitting occupying at least ten minutes. Relief almost always follows the first inhalation, and, with one or two exceptions, thus far the first inhalation has produced an uninterrupted night's rest. Upon the disappearance of the nightly paroxysm and the subsidence of all oppression in breathing, the remedy may be discontinued; but must be instantly resorted to upon the first evidence of return.

Of course it is not necessary to define what we mean by asthma, or to revert to the possible complication of some organic disease, of cardiac disease, of extensive bronchitis, of severe and unusual emphysema, of hæmic poisoning, connected with Bright's disease of the kidneys, or of that condition of dyspnœa often met with upon ascending high mountains and to which there are reported to be whole tribes subject in the high regions of Bolivia (the soroche); it is *asthma*, whatever be its subdivisions or complications, *true asthma*, to which we have referred.

The following are taken from recorded cases as matters of interest, and not as simply supporting a theory, for the remedy advocated is a simple one, harmless, except in pulmonary affections attended by hemorrhagic tendencies, and now becoming readily available. These are copied *seriatim et verbatim* from notes made at the time of treatment, and are thus taken without selection, in order to show the actual results. Although roseate enough perhaps without embellishment, they have at least the merit of not being made to appear so, and are given without comment.

1. C. M., æt. 14, male. Has dilatation of right ventricle and hypertrophy (a considerable general enlargement), subject to diurnal attacks. Has been more or less so since five years of age. Six, eight, or more periods of suffering of several weeks duration every year.

Relieved on second inhalation, and after five seemed to have recovered. No return of paroxysm for five months. Usual hour of attack 4 A. M.; premonition day before. No particular rules observed as to diet, except the avoidance of potted and spiced meats, which seemed to predispose to attacks. (This patient has since been subject to recurrence of trouble, but finds relief when the protoxide is resorted to.)

2. Mrs. G. M., æt. 35. Autumnal asthma, with coryza, bronchitis, etc. After five inhalations asthma relieved. Bronchitis removed in two weeks. Usual length of period of suffering three months. (No return the following year.)

3. Miss M., æt. 18. Diurnal attacks. Subject to same two years,

and for three months paroxysm very severe, occurring at 2 o'clock A. M. Bronchitis considerable; some emphysema; very severe case; relieved at once, cured in eight days. (One relapse after 13 months; relieved in two days; inhalations continued four nights thereafter.)

4. Mrs. C., æt. 40. Very similar to No. 2. Autumnal, no cardiac complications; recovery; no return the following year.

5. W. P. (brewer), æt. 32. Attacks diurnal, occurring 4 A. M. Complicating bronchitis considerable; part plethoric, no cardiac disease; relieved immediately and recovered in four days. (No relapse for past seven months.)

*Note.*—It should be stated that, in this and in all cases accompanied by bronchial inflammation, appropriate treatment is resorted to in addition; the medicated inhalations being relied upon simply to reduce the hyperæsthesia.

6. Mrs. C., æt. 45. Bronchial complication considerable. Asthmatic feature relieved; relapse in ten days, relieved in forty-eight hours. (In this case the asthma was evidently not a predisposing or exciting cause of the bronchial trouble, but a result of it, and a second relapse has been successfully treated without resort to the protoxide.)

7. Mr. H., æt. 16. Patient has had hemiplegic paresis for several years. Attacks of asthma diurnal and autumnal. Heart somewhat hypertrophied (eccentric).

Usual period of suffering four months. Relieved at first exhibition of remedy; cure apparently complete after fourth (no relapse).

Any prolonged detail of cases would probably be superfluous. The brevity of the record in those given is to be regretted, but the concomitant symptoms, the exciting and predisposing causes, common to asthmatics, are so familiar, that the fear of needless prolixity will be perhaps a sufficient apology.

ART. IV.—*Aneurisms of the Arteries at the Base of the Brain: their Symptomatology, Diagnosis, and Treatment.* By ROBERTS BARTHOLOW, M.D., Prof. of Materia Medica and Therapeutics in the Medical College of Ohio. Lecturer on Clinical Medicine and Physician to the Good Samaritan Hospital, Cincinnati, Ohio.

It may be proper to state at the outset, that it is not intended in this article to embrace an account of *miliary* aneurisms, first described by Charcot and Bouchard, which play so important a role in the causation of certain morbid states of the brain. It is my purpose to discuss the symptomatology and diagnosis of aneurisms of the larger arterial trunks which give rise to symptoms common to new formations in general, by interference with the functions of neighbouring parts. It is very desirable, if the facts and observations in our possession will warrant it, to separate the symptomatology of aneurismal growths from those of other neoplasia. It is certain that there are no distinctive differences in the symptoms, but

by attention to certain signs, to be hereafter detailed, a fortunate guess may at least be made.

This paper is based on the study of (1) a case of aneurism of the basilar artery occurring in the practice of Dr. Isham, of Cincinnati, which I saw at various times during life and examined after death; (2) The letters of Lebert,<sup>1</sup> containing 86 cases of intracranial aneurism collected from various sources; (3) The monograph of Durand,<sup>2</sup> embracing the statistics of Griesinger (*Archiv der Heilkunde*, 1862), of Lebert, and of Gouguenheim (*Des Tumeurs aneurysmales du Cerveau*, Paris, 1866); and (4) a number of cases which have been published in various Journals and Society Transactions, since the appearance of the exhaustive essays mentioned above. Many of these are mere transcripts of *post-mortem* observations. In some the *ante-mortem* observations were not made with accuracy and minuteness, and hence are not suited for an analysis of the symptoms. An entire failure to recognize cerebral symptoms due to hasty and imperfect observations, renders some other reported cases of little value. As an example how attention to some prominent symptom may lead the physician away from the true lesion, I may mention the case reported by Dr. Semple (*Trans. of the Pathological Society*, vol. xx. p. 112), in which an aneurism of the basilar artery caused no symptoms, the patient being treated for bronchitis!

It is to be understood that the cases which I have collected as the basis of my observations were omitted from or have been reported since 1868, the date of Durand's monograph. In Griesinger's, Gouguenheim's, Lebert's, and Durand's essays are contained nearly all the published cases of note reported up to the date at which they were respectively issued. This is the fact indeed with regard to the numerous English contributions of Brinton, Gull, Ogle, and others, to the subject of intracranial aneurisms.

CASE 1. *Singularities of conduct; numbness of left arm; vertigo; orbital neuralgia; convergent strabismus; death; autopsy; aneurism of the basilar artery.*—I am indebted to Dr. Isham, the attending physician, for the following history of this case: "On the 12th of March I was summoned to attend Mr. C——, aged 37, a very active man of *nervo-sanguine* temperament. He was the subject of severe paroxysmal pain over the right orbit. He also complained of an uneasiness at the back of the neck. His tongue was slightly coated. The pulse and temperature were normal. The case was regarded as a supra-orbital neuralgia, and was relieved by the hypodermic injection of morphia. Quinia pills were also prescribed. He engaged in the business of his calling the next day (13th), and I saw him in the evening. The pain had returned, though much modified in severity; chloral was given with good effect, and the quinia continued.

"I lost sight of him until the 17th, when he presented himself at my

<sup>1</sup> *Berliner klinische Wochenschrift*, Nos. 20 to 42, 1866. A full abstract may be found in Schmidt's *Jahrbücher der gesammten Medicin*, vol. cxxxiii. p. 281.

<sup>2</sup> *Des Aneurysmes du Cerveau consideres principalement dans leurs rapports avec l'Hemorrhage cerebrale.* Paris: Adrien Delahaye, 1866.

office with a closure of the right eye. He complained of slight pain in the ball and numbness of right side of nose and upper lip. In his efforts to elevate the eyelid he would exercise all the muscles of the face. When the lids were separated by traction, the axis of vision was found parallel with that of the right eye. The closure of the lids was attributed to spasm of the orbicularis, and, together with the other symptoms, to be due to disturbance of function in the orbital division of the fifth nerve. A liniment was prescribed to be applied about the eye, to the side of the nose and cheek, and liq. potass. arsenitis ordered. On the 18th he was again at my office in the same condition, except some congestion of the conjunctiva, with pain. He was given a collyrium of morph. sulph., and Fowler's solution was continued. At one of these visits he was examined by Dr. A. T. Keyt, who was present, and who coincided in my view of the case.

"On the 19th, when I was again called to see him, I found him able slightly to raise the lid by voluntary effort; he had also convergent strabismus of right eye, numbness of left hand, conjunctiva injected and pain in eye and head. I then feared lesion of brain involving third and sixth nerves, and warned him to remain quietly at home. The collyrium was continued, and pills of quinia and morphia given. Notwithstanding he was informed of the gravity of the symptoms, he continued in the active duties of his business this day, and almost every day until April 25th. I saw him on the evening of the 19th, when he was suffering agonizing pain, which was controlled either by hypodermic injection or chloral. The next day (20th) he was better, and I changed the treatment to strychnia sulph. gr.  $\frac{1}{40}$ , quinia gr. ij, *ter die*. I saw him each day one or more times up to April 6th. The symptoms remained much the same; the worst features lighting up sometimes and again receding. Chloral and morphia were exhibited as required. On the 6th of April he seemed much improved, and had almost perfect control of the *levator palpebræ*, but kept the eye closed from photophobia. The appearance of the eye was normal, except very slight convergent strabismus. Pain in the head and eye was still experienced, but in moderate degree. About this time he consulted Dr. Bartholow, at his office, who confirmed fears as to brain lesion. I saw him no more until the 9th, when he was about the same as on the 6th. Was called in to relieve the pain in his head, which I did, and saw him no more until the 12th, when the same office was again performed.

"On the morning of the 14th was again sent for. Found him with intense pain over forehead. Quieted him with chloral during the day, and in the evening applied five leeches to the temples.

"I was called in the 16th, 19th, and 22d to relieve the pain in his head. From the 22d to the 25th he was free from pain in his head, complaining only of fulness.

"On the 25th, which was a remarkably warm day for a spring month, he fainted in the street. Said he felt a tearing and a snap at the back of his neck, and was then rendered unconscious. He rallied sufficiently to reach Dr. Bartholow's office, where the galvanic current was applied with great relief to the pain in his head, which he described as excruciating. Had to give him a hypnotic at night.

"On the 26th he had a spasmodic seizure lasting but a minute or two, from which he awoke as from a dream. Said he experienced a sensation as of a snap at the back of his neck, and recollected nothing more about it. His wife, who alone was present, described his breathing as stertorous. Thought it might be due to the strychnia, and suspended it.

"On the 30th he had been sitting in his easy chair, and a few moments before death he remarked he felt tired, and lay down on the bed. While smelling some flowers and caressing his little boy, his wife heard him exclaim, 'Oh my head,' and he immediately became unconscious and passed into stertor. Within five minutes I reached him. His heart continued pulsating feebly and at intervals for about three minutes, respiration apparently having ceased.

"During the last year of his life Mr. C. was remarkable for his eccentricities and fickleness, and for a childish lack of judgment at times. In conversation he was unable to confine his mind to one subject for any length of time. Often, when engaged in the serious consideration of business affairs with any one, he would suddenly break off to bring in the most trivial matters, very likely having no relation to the business on hand, or which could not have been suggested by it, and in which his auditor could not have the least interest.

"His conduct at times excited suspicions that he indulged in alcoholic liquors, yet he was strictly temperate. His actions were a constant source of mortification and annoyance to his friends. He would interfere with a conversation between parties, in which he had no interest, in the most abrupt and excited manner. On occasions of friends visiting him he would take no notice of them, or hide himself; meeting them at another time, he would be most affable and cordial. He would seek advice of his most intimate and cherished friends, only to go entirely contrary to their judgment and the plainest dictates of common sense.

"His heart could never resist an appeal directed to his pockets. He would rob himself to lend to any body, no matter what security they afforded. When his wife would expostulate with him, he would say: 'It's my head; I know I don't do right, but I can't help it; I do the best I can; I do things which I know at the time I ought not to do, and yet I cannot stop myself.'

"His medical advisers assured him time and again of the great danger of his condition. He would inquire, 'Do you think it is so bad?' and laugh.

"I have recently learned that for more than two years he had complained at intervals of numbness in his left hand and arm. About twelve years ago, while in Illinois acting as a commercial traveller, he was sunstruck, and since that time the peculiarities in his character above described have been observed."

*My own observations of the case.*—Having had an acquaintance of some years with Mr. C——, and having been consulted several times by him, I am able to add some particulars to the very full and excellent history given by Dr. Isham.

On the occasion alluded to by Dr. Isham, after having experienced the attack of vertigo in the street, Mr. C—— presented him-self at my office in the hurried manner which had become habitual. He did not walk—he ran. He talked with extreme rapidity and confusedly, several ideas seeking utterance at the same time. He explained that in stepping from the street to the curb-stone, he experienced a terrible sensation in his head, and lost consciousness for a moment. His right eye was closed. The eyelids and soft parts about the orbit were swollen. He had convergent strabismus and diplopia. He could open the eye, but he had great photophobia. In consequence of the pain caused by the light and to correct the disorder of vision, he kept the eye closed. The conjunctiva was injected, the pupil

fixed, but not much dilated. An ophthalmoscopic examination, very imperfectly made owing to his restlessness and the convergence of the eye, disclosed a markedly swollen state of the papilla. He complained of great pain in the eye and in the supra-orbital branches of the fifth. There was great tenderness to pressure along the paths of distribution of the supra-orbital nerve. He had twitching of the muscles of the face. Decided numbness existed in the left hand, his appreciation of pain, of heat and cold, and of touch was lowered, and loss of muscular power was ascertained by the dynamometer.

A descending stable current of six elements passed through the right side of the head gave immediate relief to the pain, and also diminished the vertigo.

*Autopsy.*—The autopsy was made by the writer in the presence of Dr. Keyt, Dr. Isham, and Mr. Lowry, a medical student. I omit all details not necessary to the elucidation of the symptoms observed during life.

A large amount of blood was found effused in the inferior sub-arachnoid space, extending especially up along the Sylvian fissures, covering the pons and medulla, and filling in the fourth ventricle. A careful examination was made of all the arteries at the base. An aneurismal pouch, one-half inch in its longest diameter, was found on the right side of the basilar artery, in which there was a rent of considerable size. The sixth nerve was here directly impinged upon, and the fifth exhibited changes consequent on irritation from intermittent pressure. The coats of the vessel at this point had undergone the calcareous degeneration and a calcareous plate of considerable thickness formed one side of the aneurism. The vertebral artery on the right side was very small, about one-third the size of the artery on the left. In consequence of this arrangement the blood current from the left vertebral impinged with greatest force against that part of the basilar artery which had undergone the calcareous degeneration. The white substance of the brain was pale. The right lateral ventricle contained considerably more fluid than the left. The accumulation of fluid had taken place, chiefly in the anterior cornu, which was distinctly enlarged by the pressure.

CASE 2.—Girl, æt. 12. Epileptic. Paralysis of right side of face and left limbs. Aneurismal dilatation of right middle cerebral near anterior branch. Aneurism due to embolism from cardiac disease. Sclerosis of pons Varolii. Suspicion of syphilis. (*Echeverria*.<sup>1</sup>)

CASE 3.—Man, æt. 67. Epileptic. Dysphagia and paralysis of tongue. Confusion of mind. Aneurism of both vertebrals near junction to form basilar. (*Ibid.*)

CASE 4.—Girl, æt. 26. Epileptic aura proceeding from fingers of the left hand. Ptosis of right eye and paralysis of left limbs. Aneurism of right middle cerebral. Syphilitic. (*Ibid.*)

CASE 5.—Man, æt. 29. Numbness of left side of face and deafness of left ear. Paresis of muscles on left side of face, and loss of taste on left side of tongue. Vomiting. Impaired locomotion, and finally inability to walk. Loss of speech. Aneurism the size of a pigeon's egg on the left side of the basilar artery. (*Loomis*.<sup>2</sup>)

CASE 6.—Man, æt. 45. Had an attack of violent convulsions, in which pupils were contracted, recovered, and had four months afterward another seizure.

<sup>1</sup> On Epilepsy. New York: Wm. Wood & Co. 1870.

<sup>2</sup> Medical Record, January 2, 1872.

In right anterior lobe there was an old clot; also a recent extravasation. Aneurism the size of a pigeon's egg of right anterior cerebral. (*Lorbee*.<sup>1</sup>)

CASE 7.—Man, æt. —. Ptosis, œdema, insensibility, and ulceration of cornea and eyelids. No movement of ocular globes. Giddiness and headache. Anæsthesia of right supra-orbital region; right side of nose and partial of right superior maxillary region. Parylysis of 3d, 4th, 5th, and 6th nerves. Aneurism of internal carotid in the carotid canal. (*Adams*.<sup>2</sup>)

CASE 8.—Man, æt. —. Had three attacks of paralysis; left hemiplegia, right hemiplegia; paraplegia; headache; hyperæsthesia; double vision. Softening of pons. Large fusiform aneurism of basilar artery  $1\frac{1}{2}$  inch by 1 inch. Small sessile aneurism of middle cerebral. (*Russell*.<sup>3</sup>)

CASE 9.—Woman, æt. 61. Difficulty of speech; paresis of extremities. Aneurism of left vertebral. (*Sydow*.<sup>4</sup>)

CASE 10.—Man, æt. 37. Epilepsy. Aneurism of basilar artery size of a pea. Death by rupture of aneurism. (*Fuller*.<sup>5</sup>)

CASE 11.—Woman, æt. 59. Small aneurism of right middle cerebral artery, half inch from carotid. (*Broadbent*.<sup>6</sup>)

CASE 12.—Woman, æt. 29. Three years before death had pain in the temple and left side of the head. Afterward had attacks of unconsciousness and temporary difficulty in articulation. Left pupil dilated and sluggish. Paralysis of right side. Head drawn in epileptiform attacks to right shoulder. Aneurism of left middle cerebral, size of a hen's egg. (*Wood*.<sup>7</sup>)

CASE 13.—Female, æt. 27. Had a fit followed by paralysis of right side; deafness and inability to speak, followed by insensibility. Aneurism of left internal carotid at point of division into anterior and middle cerebrals. Impinged on left olfactory and optic nerves. (*Bristowe*.<sup>8</sup>)

CASE 14.—Woman, æt. 50. Impairment and then loss of motor power in left hand and arm, but not much impairment of sensibility. No paralysis of left leg. Confusion of mind; loss of memory, and difficult articulation. Aneurism of the size of a pea on both middle cerebrals. (*Bastian*.<sup>9</sup>)

CASE 15.—Boy, æt. 13. Fell in the street; left arm and leg paralyzed. Aneurism of the size of a walnut of right middle cerebral. (*Church*.<sup>10</sup>)

CASE 16.—Man, æt. 40. Aneurism of left middle cerebral. Death by rupture. (*Church*.<sup>11</sup>)

CASE 17.—A boy, æt. 14. Convulsions and pains in lower extremities. Headache. Retraction of the head. Pupils of equal size, but not sensitive to light. Epistaxis. Aneurism of the posterior cerebral. (*Hutchinson*.<sup>12</sup>)

We do not possess very exact data as to the relative frequency of aneurism of the intracranial vessels and of the other arteries of the body. According to Crisp,<sup>13</sup> of 551 aneurisms of various parts of the body, 7 were intracranial. Durand thinks it premature to make a comparison of this kind. So far as we are concerned in our present inquiry, exact determination of this question is not material. It is more important for us to

<sup>1</sup> Archives Générales de Médecine, vol. i. 1868, p. 229.

<sup>2</sup> Surcou to London Hospital.

<sup>3</sup> British Medical Journal, July 30, 1870.

<sup>4</sup> Schmidt's Jahrbücher der Gesamten Medizin, vol. 130, p. clxi.

<sup>5</sup> Pathological Society's Transactions, 1895, vol. xvi.

<sup>6</sup> *Ibid.*, vol. xvii.

<sup>7</sup> *Ibid.*

<sup>8</sup> *Ibid.*

<sup>9</sup> *Ibid.*

<sup>10</sup> *Ibid.*, vol. xix.

<sup>11</sup> *Ibid.*

<sup>12</sup> Penn. Hospital Reports, 1879.

<sup>13</sup> Transactions of the Pathological Society, vol. vii.

know the relative frequency with which the intracranial vessels are involved. We may, following Lebert, group for this purpose the arteries of the base into three systems: 1, *internal carotid and its branches*; 2, *the vertebro-basilar arteries*; 3, *the middle meningeal artery*.

The statistics are as follows:—

Lebert, Internal carotid . . . . .	76 cases.
Durand, “ “ . . . . .	29 “
The writer, “ “ . . . . .	11 “
Lebert, Vertebro-basilar . . . . .	35 cases.
Durand, “ “ . . . . .	11 “
The writer, “ “ . . . . .	7 “
Durand, Middle meningeal. . . . .	3 “

The internal carotid and its branches thus appear to be the most frequently involved. The individual arteries are affected in the following order, according to Lebert and Durand:—

Basilar . . . . .	36 times.
Middle cerebral . . . . .	34 “
Internal carotid . . . . .	21 “
Anterior cerebral . . . . .	13 “
Posterior communicating . . . . .	8 “
Vertebral . . . . .	5 “
Posterior cerebral . . . . .	3 “
Inferior cerebellar . . . . .	3 “
Anterior communicating . . . . .	2 “

The 17 cases collected by myself make the following exhibit as regards individual arteries:—

Middle cerebral . . . . .	7 times.
Basilar . . . . .	4 “
Internal carotid . . . . .	2 “
Vertebral . . . . .	2 “
Anterior cerebral . . . . .	1 “
Posterior cerebral . . . . .	1 “

With regard to the side of the brain on which aneurisms more frequently occur, the statistics of Lebert and Durand, and those collected by myself, do not agree. According to these authorities the difference in the two sides is as follows:—

Right side of the brain . . . . .	25 cases.
Left “ “ “ “ . . . . .	35 “
Occurring on both sides . . . . .	5 “

My own figures are as follows:—

Right side only . . . . .	6 times.
Left “ “ . . . . .	5 “
On both sides . . . . .	3 “



As regards sex, the proportion between male and female is nearly the same in my collection of cases as in the collections of Lebert and Durand. Of 114 cases given by these authorities, 61 were males and 42 females. The sexes in my cases were distributed thus: 10 males and 7 females.

Exact data on this subject do not exist, but there is much reason for believing that syphilis is the chief cause of intracranial aneurism. In about one-half of my collection of cases there were indications of syphilitic infection. Embolism from cardiac disease probably ranks next in frequency as a cause of arterial dilatation and aneurism.

The size of intracranial aneurisms varies greatly. Those of the anterior and middle cerebral usually attain greater magnitude than aneurisms of other vessels. In this situation they may enlarge considerably without much interference with important neighbouring parts. The size of a pea or of a pigeon's egg is most usual, but sometimes they reach the magnitude of a pullet's egg. Death takes place usually by rupture, and this event occurs irrespective of the size of the aneurism, being determined by its character. These aneurisms are more frequently fusiform than sacculated. Rupture occurs earlier in the latter, especially, if an atheromatous condition of the vessels exists.

*General Symptoms of Intracranial Aneurism.*—Very attentive consideration should be given to the signs by which we recognize an intracranial neoplasm, in order to separate, if possible, those belonging to aneurism from those caused by other adventitious products. A tumour of any sort, slowly growing in the cranial cavity, will alter or abolish functions in adjacent parts by direct pressure, by setting up an irritative action and consequent alterations of structure, and will affect the functions of the brain in general, by pressure on the whole contents of the cavity. The symptoms caused by the conditions first named in the foregoing sentence generally indicate the position of the neoplasm. It will be most convenient to consider these after having examined the general disorders of the functions of the cerebral mass.

Clouston<sup>1</sup> has recently reported some very curious observations, showing the influence of continuous pressure on the contents of the cranial cavity. In two cases of brain tumour, he found after death, "that a portion of the gray and white substance of the convolutions had passed through a small lobe in the dura mater, expanded on the outside of it in a secondary cranial cavity it had made for itself by absorption of the skullcap." These unique observations throw a flood of light on the much disputed cause of *hernia cerebri*. The experimental studies of Pagenstecher<sup>2</sup> also furnish us much valuable information in regard to the influence of pressure on the functions of the brain, but the effect of pressure, suddenly and artificially

<sup>1</sup> Journal of Mental Science, July, 1872.

<sup>2</sup> Experimente und Studien über Gehirndruck. Heidelberg, 1871.

produced, cannot fully illustrate the phenomena which follow the slowly-developing pressure of an aneurism or brain-tumour. It is certainly the case, however, that a new formation developing in any part of the cranial cavity must interfere, by pressure, with every other part, and symptoms will usually be present, although they may not be so pronounced as to attract attention.

*Vertigo*.—One of the earliest symptoms experienced is dizziness. This appears to me to possess no little value as a diagnostic mark, for in other tumours of the brain, vertigo is a symptom coming on at a much more advanced period in the history of the case. In the beginning slight, and but momentary in duration, it increases in severity, and becomes at last nearly constant. The severity of the vertigo varies with different causes. Exercise and emotional disturbance, as well as all medicinal agents exciting the intracranial circulation, increase its violence. Quiet in the recumbent posture diminishes it. Sometimes it is so severe as to render any effort of the mind distressing, and it may even proceed as far as loss of consciousness.

In the case which I have reported, as well as in many others, strange sensations were experienced in the head. This may be a localized throbbing—"snapping," as my patient expressed it. These sensations are usually referred to the neighbourhood of the position of the aneurism, as the occiput in the case of basilar aneurism, the middle ear in aneurism of the internal carotid, and the temple when the anterior cerebral is involved.

*Headache* is a constant symptom in intracranial aneurism. Like the abnormal sensation referred to above, the site of greatest intensity of pain indicates the position of the aneurism. This is especially the case in basilar aneurism, the pain being felt in the nucha, or about the occipital protuberance. The headache is also general, with periods of exacerbation, in addition to the strictly local pain. A distinction is to be drawn between the headache properly so-called, and the neuralgic pain in the distribution of the fifth, due to pressure on the trunk of the nerve. It is true the general headache in these cases is caused, most probably, by stretching of the fibres of the fifth distributed to the dura mater, but this pain is different in character from an orbital neuralgia, for example, due to pressure on the ophthalmic division of the fifth.

*Epileptiform convulsions* occur in about one-half of the cases. The attacks, as regards severity, vary from simple and momentary loss of consciousness, to the most violent clonic convulsions. Besides general convulsions there occur local spasms, as twitching of the facial muscles, of the muscles of the neck, of the trapezius, etc. The occurrence of epilepsy appears to be influenced by the vicinity of the aneurism to the "spasm-centre" of Nothnagel; hence, this symptom is to be expected in aneurism of the vertebro-basilar system, and to be considered exceptional in cases of aneurism involving the anterior and middle cerebrals. Convulsions occur,

it is true, when aneurisms of these last-named vessels give way, but such spasms are clearly different from those caused by irritation of the medulla oblongata. This statement is opposed to the views enunciated by Niemeyer,<sup>1</sup> who holds that tumours involving the cortical periphery are more frequently accompanied by epileptiform convulsions. His words are as follows:—

“It is very remarkable and inexplicable that they occur almost solely when the tumours are in the cerebrum, and when they are near the cortical substance.”

Russell Reynolds<sup>2</sup> gives an opinion, “as the result of an examination of a large number of cases, that convulsions are most common when the disease is situated in the posterior lobes of the brain, or in the cerebellum, and least frequent when the anterior lobes are affected.”

Jaccoud<sup>3</sup> says that epileptiform convulsions result from excitation of the medulla oblongata, by direct irritation, or, through reflex influence, by a distant irritation.

Every body is now familiar with the remarkable experiments by which Nothnagel<sup>4</sup> established the existence of a “spasm centre,” and of Setsechenow, who demonstrated an inhibiting centre for reflex movements. These facts, determined experimentally, agree with the statistics which I have collected, showing the more intimate dependence of epileptiform convulsions on tumours at the base of the brain. I should not fail to note, however, that Ladame, who has written an elaborate work on brain tumours, (*Symptomatologie und Diagnostik des Hirngeschwülste*) in a paper on tumours of the pons in the *Archives Générales*, thus formulates his opinions on this question:—

“If a tumour has attained sufficient size to allow of its presence being diagnosed, and if convulsions be present, the probability is the seat of the tumour is not in the pons Varolii.”

The case of aneurism of the basilar (case 1st) was characterized by two kinds of epileptiform attacks: loss of consciousness without, and loss of consciousness with, convulsions. The rule of Ladame is, therefore, much too absolute. Epilepsy seems to be a constant symptom in aneurism of the vertebral arteries.

Jaccoud, in making a differential diagnosis between aneurisms and other tumours occurring within the cranium, asserts that the *psychical functions* are little or not at all affected. This is not in accordance with my own conclusions after the examination of many reported cases, and is certainly negatived by the facts of case 1st.

Libert enumerates under the head of disorders of intelligence, *faiblesse*:

<sup>1</sup> Niemeyer, Text-Book of Practical Medicine, Am. ed., vol. ii. p. 242.

<sup>2</sup> System of Medicine, vol. ii. p. 450.

<sup>3</sup> Traité de Pathologie Interne, tome premier, Paris, 1870, p. 230.

<sup>4</sup> Archiv für Patholog. Anat. Band xlv., Hft. 1.

of mind, impaired memory, stupidity, delirium, and transitory paroxysms of mania. Dr. Clouston, in the paper from which I have already quoted,<sup>1</sup> gives, amongst others, the following deductions in regard to the mental symptoms of brain tumours based on an analysis of six cases :—

“That irritability and loss of self-control are the first mental symptoms of those tumours of the brain which directly produce morbid psychosis.

“That a blunting of the whole of the mental faculties soon comes on, and gradually passes into coma.”

It is no doubt true of intracranial aneurisms; as of other adventitious products in the brain, that they sometimes occur without any disturbance of the psychical functions. That no symptoms of mental disorder were observed in many cases, is not conclusive that none existed. Many of the reported cases came under observation when such accident as rupture required admission to the hospital or medical attendance, and then an imperfect history only could be obtained.

*Special Symptoms.*—Aneurismal tumours of the arteries entering into and forming the circle of Wills, may interfere with and prevent or interrupt the function of all of the cranial nerves from the first to the twelfth. They may cause softening by pressure of the anterior and middle lobes of the cerebrum, and part of the cerebellum. They may impinge upon and disorder the function of the crura cerebri, the pons Varolii, and the medulla oblongata. They may compress the superior and inferior petrous sinus, the cavernous sinus, the transverse sinus, and the coronary sinus. The special symptoms which they produce will indicate with great certainty their situation. An aneurism of the internal carotid will affect the sense of smell by compression of the olfactory nerve; will also cause ptosis, convergent strabismus, and a dilated pupil by pressure on the motor oculi; will produce amaurosis by direct interference with the optic; will cause congestion of the eye and swelling of the veins of the face by compression of the cavernous sinus, and will be accompanied by intense tic douloureux, especially in the ophthalmic division due to irritation of the fifth nerve. With the growth of the tumour, especially if that portion of the artery within the carotid canal be involved, there will occur noises, pulsating in character, in the ear, followed by impaired hearing, and finally, by complete deafness. The facial nerve may also become involved, and paralysis of the face on the same side will be observed. Softening of the neighbouring part of the middle lobe will take place, and by reason of this, or by pressure on the crura cerebri, crossed hemiplegia will occur.

As the middle cerebral, except the first part, does not come into relation to the cranial nerves, and lies in the fissure of Sylvius, between the anterior and middle lobes of the cerebrum, an aneurism of this vessel may attain considerable size without producing any other symptoms than those common to adventitious products in the brain—headache, pulsative in char-

<sup>1</sup> Journal of Mental Science, July, 1872.

meter, vertigo, confusion of mind, visual disorders, etc. The headache is usually felt in the temples. In consequence of the pressure of these growths, softening of the neighbouring cerebral tissue takes place, and when extensive may, of course, invade the motor tract, causing hemiplegia. When the aneurism is on the left middle cerebral, aphasia may be present, with or without right hemiplegia.

Occasionally, the motor oculi may be impinged upon, when there will occur ptosis, divergent strabismus, etc. Convulsions do not often take place. When the artery gives way, convulsive seizures may be observed, similar to those which accompany extensive meningeal hemorrhage. The extravasation may not be sufficient to terminate life, when the case is assimilated to one of ordinary apoplexy, due to a rupture of an atheromatous vessel or a miliary aneurism.

The *posterior communicating artery* is in a situation to come into relation with parts, the disturbance of whose functions causes very characteristic signs. It lies under the optic tract and the crus cerebri, and the third and sixth nerves pass alongside of it. Disturbances of vision due to pressure on the optic and motor oculi would hence be present early. As the tumour enlarges, disorder of locomotion, or hemiplegia, results from pressure on the crus cerebri. Epilepsy has been observed, and Lebert speaks of mental apathy, stupor, delirium, monomania, as symptoms in these cases.

The most important of the intracranial aneurisms are those seated on the *basilar artery*. This vessel is more frequently affected in this way than any single artery of the brain, and it comes into relation with some of the most important parts of the encephalic mass. The crura cerebri, the pons, the medulla oblongata, the cerebellum, and the third, fourth, fifth, sixth, seventh, and eighth nerves may be directly impinged on as an aneurism enlarges. The symptoms will vary with the position of the aneurism, as regards the direction of the vessel, and the size of the tumour. One of the earliest, most distressing and persistent symptoms is headache. This is very commonly, indeed, felt in the occiput, and is sometimes confined to a limited region. Frequently the pain radiates from this point, over the neck and shoulders. Besides headache, *le douloureux* is sometimes present. This symptom, as in Case 1, is dependent on irritation of the trunk of the fifth, and the side on which the pain is felt is determined by the position of the aneurism. Convergent strabismus will occur when the sixth nerve is paralyzed by pressure, and ptosis, a dilated pupil and divergent strabismus, when the third nerve is destroyed. When the third, fourth, and sixth nerves are involved, the eye will be without motion, the pupil dilated and fixed. Pressure on the cavernous sinus will cause optic neuritis, "choked disks,"<sup>1</sup> and swelling of the eyelids and face by interference with

<sup>1</sup> Allbutt, On the Use of the Ophthalmoscope.

the return of blood through the ophthalmic and facial veins. Vertigo is also usually present, but, according to Lebert, not so commonly as headache. The vertigo is frequently accompanied by odd sensations felt in the occiput, due in part to the vertigo, and in part to pressure and irritation of the motor tract. More or less disorder of locomotion may occur. Sometimes, but rarely, the irritation extends deeply enough to involve the sensory fibres, when hyperæsthesia, or, if the change has proceeded as far as destruction of tissue, anæsthesia, may be present, and may be more or less symmetrical on the two sides of the body. Bilateral numbness, alternating hemiplegia, auditory paraplegia, or a general paralysis may ensue. Very commonly the nerve is so far damaged as to cause deafness. Dysphagia and aphonia (paralysis of chorda tympani, glosso-pharyngeal, etc.) may be present. The speech is frequently affected, sometimes hesitating, sometimes precipitate, as was well marked in Case 1.

Various mental symptoms are usually observed, as feebleness of memory, mental depression, and various perversions of the moral and intellectual faculties.

In aneurism of the *vertebrals*, we observe dysphagia, aphonia, vomiting, obstinate constipation, disorders of motility and sensibility, epileptiform convulsions, and finally the mental symptoms common to aneurisms of the other arteries of the base.

*Treatment.*—The remedial management of intracranial aneurisms is not an entirely hopeless undertaking. Mr. Coe<sup>1</sup> cured an aneurism of the internal carotid by ligation. At least the symptoms which were considered characteristic of intracranial aneurism, disappeared after tying the vessel externally. This operation offers a reasonable expectation of success in the case of aneurism of that portion of the artery in the carotid canal.

Since the remarkable demonstration by Langenbeck,<sup>2</sup> of the influence of ergotin administered hypodermically, over aneurisms situated externally, we have in this remedy a precious resource against intracranial aneurism. If, as Hildebrandt<sup>3</sup> has recently shown, ergotin may cause absorption of uterine fibroids by its action on the vessels, it requires little exercise of faith to believe that it may accomplish good results in intracranial aneurism. The solution employed by Langenbeck was as follows: R.—Ergotini, gr. ij; spts. vini rect., glycerini puri, aa ʒss. Five minims contain  $\frac{1}{2}$  of a grain.

Hildebrandt recommends a solution of three parts of the aqueous extract of ergot (Ergotiu of Bonjean) in seven parts each of water and glycerine. This occasions less smarting than a solution containing alcohol.

<sup>1</sup> Holmes's System of Surgery, vol. iii., 2d ed.

<sup>2</sup> Berliner klinische Wochenschrift, No. 2, 1869.

<sup>3</sup> Ibid., No. 25, 1872; also Quarterly Summary in current No. of this Journal.

At the same time that ergotin is being used hypodermically, we may employ the iodide of potassium internally. Since the publication of the results with this agent, by Roberts, of Manchester, and Balfour, of Edinburgh, it has been used with more or less success in the treatment of internal aneurisms. As syphilis appears to be one of the most important factors in the causation of intracranial aneurisms, the iodide of potassium is especially indicated in those cases originating in this way. In order to be effective, this remedy must be administered in large doses,  $\mathfrak{zj}$  to  $\mathfrak{zj}$  or more, three times a day.

Besides these two remedies, we may employ the galvanic current for the relief of the neuralgia of the fifth, which so frequently attends aneurism of the vessels at the base. A downward stable current, from six elements of Siemens and Halske, gave great relief to Case 1.

The reader may ask what personal experiences I have to offer in favour of this method of treating intracranial aneurism. In one case, in which the character of the symptoms indicated an intracranial neoplasm, most probably aneurismal, I succeeded in procuring marked amelioration, and, it may be cure, by a persevering use of large doses of iodide of potassium, and the galvanic current. I have not reported this with the other cases, because there must ever remain a great degree of uncertainty in regard to the existence of an intracranial aneurism, the actuality of which has not been demonstrated by *post-mortem* examination.

ART. V.—*Hypodermic use of Strychnia.* By JULIAN J. CHISOLM, M.D., Professor of Operative Surgery, University of Maryland; Surgeon in Charge of the Baltimore Eye and Ear Institute, etc. etc.

TWELVE months since I published my experiences with the hypodermic use of strychnia in retinal troubles. Since that period I have used it daily in nervous affections of the eye, with very varied results, at times very striking, again quite negative. In no case has the use of the remedy been followed by any injurious effects, although a few cases were quite susceptible to its toxic influences. I have been surprised to find that in increasing daily the quantity injected under the skin, a much larger amount than that mentioned by the books may be safely administered, with good results. In my early experiences I always commenced with the  $\frac{1}{16}$  of a grain, and slowly increased until  $\frac{1}{8}$  of a grain was used, which latter amount I was afraid to exceed. Now I usually commence with the  $\frac{1}{4}$  of a grain.

The strength of the solution which I use is sulph. strychniæ grs. iv., aquæ dest.  $\mathfrak{zj}$ , each minim containing the  $\frac{1}{128}$  of a grain of the alkaloid. The sulphate of strychnia is quite soluble in pure water, at least to this ex-

tent, and in this strength it makes a very convenient form for administration. For the past ten months I have usually commenced the strychnia treatment by injecting 3 minims of the solution, equal to  $\frac{1}{40}$  of a grain of the drug. If no marked bracing of the muscles, heaviness of the calves, tightening of the jaws, or stiffening of the joints ensues, the amount of the solution for each day's injection is increased by one minim until a maximum dose is finally reached, which is frequently  $\frac{1}{6}$  and often  $\frac{1}{5}$  of a grain. In one case  $\frac{1}{4}$  of a grain of the sulphate of strychnia was injected at a dose, and continued daily, without causing any special annoyance. When in progressively increasing doses the physiological effects of the remedy, indicated by muscular contractions, are excited, I do not diminish the quantity for the next injection, as experience has taught me, that the same dose, when repeated for two or three days, will cease to annoy, and then an augmentation may be safely indulged in. By this methodical and gradual increase, the maximum dose can be attained in from 15 to 20 days. In some cases I have found that the good results are not secured until large doses are reached; simulating, in this respect, the large doses of iodide of potassium, which excites a rapid subsidence in syphilitic symptoms, when ordinary doses of from 5 to 10 grains, continued for a long time, had produced no decided effects.

When the dose of strychnia has attained its maximum, that is to say, as much as can be comfortably borne, it should be steadily persevered in at this strength as long as any improvement shows itself. I have continued the injection of  $\frac{1}{6}$  grain doses for 3 months. Should, from any cause, the daily injection be interrupted, even for a short time, it is not safe to resume the dose left off with, but a smaller quantity should be used, which may be rapidly increased until the full dose is again reached. As with all potent medicines, cases will now and then be met with, in which the commencing dose of  $\frac{1}{40}$  of a grain may prove too powerful. In a single case only have I experienced uncomfortable muscular contractions from this small quantity. The effects in this patient were sufficiently annoying to establish a rule for a cautious commencement in every case. I have heard of one case of marked idiosyncrasy in which a single dose of  $\frac{1}{50}$  of a grain of strychnia (the first), hypodermically used, caused convulsions and insensibility, which continued for several hours. The injection was made by a country physician, and I cannot vouch for the accuracy of the amount injected. In another case, coming under my immediate observation, that of a young lady of nervous temperament, an attack of convulsions of short duration was brought on by the use of  $\frac{1}{20}$  of a grain, which seemed to be the largest dose that she could take with safety. The best results are obtained when two injections are made daily, morning and evening. When it is inconvenient to make more than one injection per day, the effects upon the system may be kept up by the administration of



strychnia pills, first in doses of  $\frac{1}{16}$ , then  $\frac{1}{8}$ , and finally  $\frac{1}{4}$  of a grain each, twice a day.

There is no advantage in injecting the solution under the skin of the temple, or other portion of the head, for the cure of eye or ear diseases, as it causes needless pain to puncture frequently these sensitive surfaces. As the remedy can only act upon the nerves of sight and hearing through the instrumentality of the nerve centres, and by the circulation, I always select the arm as the least sensitive and most convenient seat for the injection. In my experience, the loose skin near the outer surface of the shoulder, or in the upper and outer third of the arm, is the preferable site for the operation. Care must be taken to avoid superficial veins, otherwise bleeding from the puncture annoys, and the arm becomes sore. When the point for throwing in the injection is carefully selected, the puncture should be bloodless.

The cannulated trocar of the hypodermic syringe should pass through the skin without resistance. If force be necessary to enable it to reach the subcutaneous cellular tissue, the cause will be found in a blunt heavily shouldered point which needs the cutler's care. As obtained from the instrument maker, the new points are always dull and need sharpening. The necessity for keeping this useful instrument in order is not so seriously felt by those who use it seldom; nor would the pain of application be complained of by persons upon whom it is now and then inserted for the relief of severe neuralgias. When it is systematically used once or twice every day for months upon the same individual, its easy or forced introduction, with the subsequent little or much uneasiness, will be commented upon.

Those not skilled in the use of the hypodermic syringe should, in applying it, first lift a fold of the skin between the thumb and index finger of the left hand, then place the point of the canula at the base of this fold, avoiding visible veins, and thrust it forward until at least one half the thickness of the fold is transfixed. When the canula has perforated the skin and its point lies in the loose cellular tissue in the centre of the fold, all resistance to the onward progress of the point will have ceased. The canula needle will now have gone sufficiently deep under the skin. In the next step of the operation the surgeon lets go the fold and with the same fingers steadies the syringe so that the point may not draw out of the puncture; nor, on the other hand, be thrust too deeply whilst the fluid is being injected. As the injected fluid causes an elevation of the skin, making a little reservoir in the subcutaneous cellular tissues with the puncture as an outlet, it is best by pressure with the finger upon this prominence to disseminate the fluid through the plane of areolar tissue before the canula be withdrawn; otherwise some of the injected fluid will escape, and the full dose not be retained for absorption.

As we are dealing with a very potent remedy, it is the safest course to put in the syringe only the dose to be injected. Some physicians fill the

syringe, and throw under the skin from this quantity the number of minims desired, as marked upon the scale attached to the instrument. Or they screw down the gauge upon the handle and then inject from the large quantity. Should the screw gauge be loose, or the piston work hard, a larger quantity than is desirable will escape through the canula, and an innocent dose may be accidentally converted into a poisonous one by this addition of a few minims of the solution. I adopt the following plan in using the syringe. First, take into the syringe more fluid than the dose to be injected. Holding the instrument with canula upwards, expel all air from the cylinder, and continue to push the piston until all excess of fluid, not required for the injection, is driven out. As I leave in the hypodermic syringe only the dose which is intended to be thrown under the skin, no possible accident can occur.

I have had patients brought to me who had received hypodermic injection at the hands of excellent physicians, and had complained much of the severity of the treatment. In these patients could be traced every puncture by its permanent scar, as if from a boil, in proof that a good deal of painful inflammation must have been excited. This condition could only have been induced by dull needles, or by the use of acidulated solutions of strychnia. The sulphate of strychnia, as already stated, is readily soluble in distilled water for the strongest solutions that should be used hypodermically; and, if the canulas be sent to the cutler's for sharpening as often as surgical instruments should be, the entire trouble which tends to make patients timid would be obviated. When used with the necessary precautions, the instrument leaves so slight a trace that in twenty-four hours the location of the puncture can scarcely be made out. As a rule, no inflammatory redness should follow upon the hypodermic use of strychnia. At times when I have accidentally punctured a small vein, a discolored spot, from blood extravasation, will remain for a few days, and its presence creates some soreness. With proper care this accident should not occur.

Cases in which the hypodermic use of large doses of strychnia will prove useful are quite varied, and their number is daily increasing. In ophthalmic surgery the free use of the remedy is in some diseases curative, in others palliative only.

*Hemeralopia*, even of months' standing, will yield so promptly to a few injections of the sulphate of strychnia that the remedy may be considered nearly antidotal in character, and can be relied on with confidence. I have often observed night-blindness, in recent cases, to disappear after two injections.

In cases of *muscular asthenopia*, from overwork, in which reading becomes painful, with letters running into each other, or in which the letters lose their sharp outline when looked at for a few minutes, equally prompt relief will often follow upon the hypodermic use of the remedy.

In *amblyopia* of recent occurrence, where small objects do not suffi-

ciently impress the retina to excite clear vision, much confidence can be placed in strychnia.

In *tobacco amaurosis*, I have met with a decided and prompt response from the use of the syringe.

A case in point just dismissed from treatment was that of Mr. R., whose vision for the last three months has been steadily and perceptibly decreasing—cause, excessive use of tobacco—general vision misty, both for near and distant objects. Has been forced to give up newspaper reading. After the daily use of strychnia for two weeks, he could read "brilliant" type, which is the finest print.

In *progressive nerve atrophy* not dependent upon intracranial trouble, there is no remedy, that I am aware of, which will give such satisfactory results. In white atrophy the effects are varied; at times useful sight is restored; whilst in others, equally promising at the commencement of treatment, the effects are negative even after a careful and continued use of the remedy in full doses.

A gentleman now under treatment, a case of white atrophy with chalky disks and threads of vessels, was treated by me ten years since for the same trouble, and his case was then deemed hopeless. He could distinguish objects when brought very near to the eye, and held towards the temporal side. For the past ten days he has been taking hypodermically large doses of strychnia, and, by the use of test objects, notes a daily improvement, being able now to distinguish a door knob sixteen feet off.

In *amblyopia*, connected with choroidal atrophy, whether there be large crescents or a spotted fundus, I have observed the vision to be permanently sharpened under the hypodermic use of strychnia. In fact whenever the retina or optic nerve needs stimulation to correct defective vision, the subcutaneous injection of a solution of strychnia will be found of benefit.

As strychnia exhibits an indirect influence over the contraction of blood-vessels, its hypodermic administration may be found of great value in cases of intra-ocular congestions, especially glaucomatous conditions, where its action, by relieving the distended bloodvessels—and thereby diminishing tension, may obviate the necessity of an operation upon the eyeball. I have heard of one case of *acute glaucoma*, in which prompt relief is said to have followed upon the hypodermic injection. Sufficient experience has not yet been collated in these congestive cases to induce a reliance upon the remedy. Should a further experience in the use of strychnia in glaucoma sustain the reputation of the drug in the relief of other eye troubles, this new field for its application will be hailed as one of the most valuable contributions to modern ophthalmic surgery.

ART. VI.—*Ovariectomy by Enucleation, without Clamp, Ligature, or Caution.* By J. F. MINER, M.D., Professor of Special Surgery in the University of Buffalo, Attending Surgeon to the Buffalo General Hospital, and to the Hospital of the Sisters of Charity.

IN proposing a new method of procedure in so important an operation as ovariectomy, it is quite becoming, at least, to state the facts upon which the proposition rests, and leave others to draw their own conclusions.

During an active surgical practice of twenty-five years, I have been in the constant habit of enucleating solid and cystic tumours from all the important surgical regions, following in this the example and teaching of surgeons generally. We have all felt a safety when attempting to remove these morbid growths, if we could find a well-marked boundary where the morbid could be separated from the healthy tissue, by the finger or handle of the scalpel; indeed, but for expectation of finding a well-defined boundary to be thus broken up, the removal of many of these tumours would never be attempted. Surgeons have always, so far as I know, been in the habit of *enucleating* all other tumours, not inextricably joined to the surrounding tissues, so that, upon a little reflection, it will appear strange that it should not earlier have been tried in ovariectomy, rather than that it should now be proposed and urged upon the profession for trial.

No surgeon in the world was ever more surprised at what he had done than myself, when I found that I had removed a large ovarian tumour without ligating a single vessel, and without any hemorrhage worthy of notice.

My first observation and experience in this procedure occurred in April, 1869, and the case was reported in detail in the *Buffalo Medical and Surgical Journal* for June of the same year.

I was invited to remove an immense ovarian tumour of two years' growth, which had been repeatedly tapped, but the contents at length proved too thick to be drawn through the largest sized canula, and, distress becoming too great for endurance, any operation which would end it, whatever might be the result, was gladly accepted. The tumour was multilocular, weighing, as near as could be determined, one hundred pounds. It was attached throughout its entire circumference to the omentum, intestines, walls of the abdomen, and all other parts with which it came in contact. These attachments were not so firm but that they could be broken up, and with great care the tumour was separated from the surrounding parts until the pedicle was reached. The process of enucleation had been carried on so successfully and so extensively, that encouragement was afforded for continued trial. The pedicle was large, and extended over a wide surface, but by careful and patient effort, it was separated from its entire attachment to the tumour, and the immense growth removed without the ligation of a single vessel. The terminal branches of the vessels of the pedicle gave out no more blood than issued from the vessels of the

attachments elsewhere, and there appeared no more occasion for ligature here than elsewhere. All hemorrhage soon ceased, and the incision was closed by interrupted suture. The success of this procedure was complete, and the patient continued to improve, declaring herself quite well at the end of about two weeks, without having had an unfavourable symptom. She now commenced to lose her relish for food, grew weak and desponding, and died from exhaustion on the twenty-first day after the operation. The fatal termination detracted nothing from the success of this mode of treating the pedicle; indeed, so remarkable was the size and attachment of the tumour, that any attempt at recovery was surprising, and yet the feeble, emaciated, exhausted patient continued to live long enough to show that this manner of treating the pedicle was, at least in her case, unobjectionable.

The second opportunity I had of testing the feasibility and safety of the plan, was in the case of a German woman, aged 66, in the Buffalo General Hospital, during December of the same year. She was of feeble and delicate appearance, and considerably emaciated. The operation was made in presence of the students of the Buffalo Medical College, and many physicians, and I was assisted by my colleagues, both of the College Faculty and Hospital Staff. This tumour was found also attached to the walls of the abdomen and omentum, but the adhesions were readily broken up. The cysts were emptied to some extent, and the tumour raised from the cavity of the abdomen. On reaching the pedicle it was found large, its principal arteries throbbing distinctly. Commencing at the base of the pedicle, the fingers underneath all, it was gently separated or torn from the cyst, following out the vessels to their final termination, as they extended over the walls of the tumour. Upon removal it was found to weigh seventy-one pounds, and to be composed of numerous cysts. The bands of vessels composing the pedicle, when separated from the tumour, contracted so as to corrugate the vessels, and leave the pedicle appearing almost as if divided by a knife. To the surprise of my associates, little hemorrhage followed the separation, less than attended separation of the bands of attachment elsewhere. She recovered from the anæsthetic, received the congratulations of her friends, and seemed very comfortable. By misunderstanding of attendants she received, after four hours, a second subcutaneous injection of one-half grain of morphia, and soon appeared as if narcotized. From this she could not be aroused, and she died eighteen hours after the operation.

*Post-mortem* examination showed no hemorrhage, and we inferred that death was from either an overdose of morphia, or shock, or both combined.

These and some other similar cases were soon after published in the *Buffalo Medical and Surgical Journal* in connection with remarks as to the safety and general advantages of this method of operation, and since then other surgeons have added their experience to my own, so that I am no longer confined to personal observation alone, repeated trial having made it *certain* that the ovarian tumour can be removed without the ligation of vessels, thus leaving no pedicle to treat.

It is well known that all the difficulties and many of the dangers of this operation have depended upon the pedicle, its length, size of vessels, modes of treatment, etc. etc., so that a proposition to avoid all these, all

clamp, cautery, and ligature, and really have no pedicle, may naturally appear startling to surgeons who have tied large vessels in the operation, or have witnessed the fearful hemorrhage which sometimes takes place from slipping of clamp or ligature; a moment's reflection will, however, remove the surprise. The ovarian tumour is composed of a firm, dense, fibrous cyst, containing fluid of varied colour and composition. It may, and it may not, have a solid portion, but usually it does have more or less of the latter, and it is often divided into numerous smaller cysts—cysts within cysts. Externally it has this dense, firm covering, and the vessels which sustain the growth enter it, if at all, only of capillary size. The attachment of the pedicle to the cyst is much more easily broken than any one would suspect who has not attempted its separation in the manner described. The same efforts which are made to separate the adhesions elsewhere, if extended to the pedicle, will be found equally successful. The finger should be introduced under the central portion of the pedicle, fully down upon the cyst, and by a gentle elevation followed out along the fasciculi of vessels as they extend over the walls of the tumour; nothing can be more easy of execution, or more readily accomplished. Other similar cases might be related, but I choose to refer to the experience of others in confirmation of my proposition, rather than multiply cases of my own. Prof. Thomas, in his recent work on Diseases of Women, states:—

“I have resorted to this method advised by Dr. Miner, of Buffalo, N.Y., three times, with good results, in cases which would have proved unmanageable by other means. . . . It appears to me to be the most valuable of all the contributions to ovariectomy which have emanated from this country.”

Richard H. Meade, Esq., Consulting Surgeon to the Bradford Infirmary, England, relates a case in which he performed ovariectomy, and observes:—

“When I commenced the above operation I had no idea of imitating his [Dr. Miner's] proceeding, but when the tumour (to my horror at the time) enucleated itself, and there appeared to be no bleeding from the pedicle, I determined to follow his example, and leave the torn surface unsecured, thinking that the risk from hemorrhage was less than that from inflammation from the presence of a foreign body in the peritoneal cavity. My case turned out successfully, and I think I should venture to repeat the proceeding in some special cases.”  
—*Brit. Med. Journ.*, November 26, 1870, p. 577.

Thus it will be seen that the experience of other surgeons was early found to agree with my own, and my convictions of its safety and propriety strengthened. More recent observations have confirmed and made it, I think, *certain* that ovarian tumours can be removed as other cystic tumours are removed, by *enucleation*, that is, by separation from the vessels and tissues by which they are surrounded and nourished, that it can be done without hemorrhage, and without ligation of vessels, thus avoiding many of the dangers attending the operation, such as secondary hemorrhage, as where large vessels are ligated or secured by the clamp; the *debris* of burnt tissue, as a source of peritoneal inflammation, where the cautery has been employed; the decomposition of parts strangulated beyond the liga-

ture, when all is returned into the abdominal cavity, or the keeping open of the incision if the pedicle is placed in the lower angle of the wound; in a word, avoiding all the difficulties and dangers attending the treatment of the pedicle.

At the risk of being tiresome to my readers, I will refer to some of the particulars of my last operation, as it illustrates what may be hoped for in this method of removing these growths.

My friend Dr. S. F. Mixer, of Buffalo, who had already become familiar with this plan of operation in ovariectomy, invited me to remove an ovarian tumour in May last, from a young lady 22 years old, of nervous, delicate temperament. The growth had been noticed for only about six months; consequently was rapid in formation, and exactly the kind to test, so far as any one case could test, the safety of enucleation. After the patient was fully under the influence of chloroform, an incision about four inches in length was made, exposing the tumour. The body was found directly under the incision, and was attached to the walls of the abdomen for a diameter of four or five inches. This being separated, a large trocar and canula were introduced, through which the contents of the cyst escaped, and the tumour was drawn through the opening and raised from the cavity of the abdomen. The pedicle was now carefully separated from the cyst, beginning at its central portion and peeling the vessels and tissues by which they were surrounded from the walls of the tumour. This was readily effected, and the tumour, weighing eighteen pounds, removed. Two small vessels bled a little, and torsion was made with artery forceps. No further hemorrhage, indeed no hemorrhage worthy of mention, attended the separation, which would not have ceased spontaneously in a few minutes. The abdomen was sponged of all blood, serum, and such contents of the cyst as had escaped, and the wound closed by interrupted silver suture, supported by adhesive strips passing around the body, and the patient placed in bed. She vomited that night several times, apparently from the effects of the chloroform, which, with the anxieties of the operation, increased the pulse to 120 per minute. After this subsided, or after the first forty-eight hours, the patient had no further symptom of disease, pulse became natural; appetite good, expression cheerful; no pain, tenderness, swelling or suppuration followed. The patient was not made ill by the operation.

Whoever had seen ovariectomy performed by any of the other methods, and had then witnessed the ease, rapidity, absence of hemorrhage, and completeness of this surgical procedure, could not but be impressed with the safety and superiority of this over any other method before proposed.

It will be asked, can all ovarian tumours be removed by this method? Perhaps it is not possible to remove all ovarian tumours by any plan of procedure. Certain it is, that surgeons have been in the habit of making what they term exploratory incisions, and in some cases abandoning the undertaking. These abandoned cases were formerly very numerous, but the discovery that adhesions did not make it impracticable to proceed reduced the number very greatly. Many of the cases formerly abandoned could, beyond doubt, have been removed by enucleation, and similar ones are now

removed, not only by this but by all other methods of operation. The "exploratory incision," so called, will remain, as expressive of a condition of things not anticipated by the surgeon, so long as it remains impossible to make in all cases positive and definite diagnosis; but it is believed that all ovarian tumours capable of removal can be removed by the method proposed, with advantages so manifestly superior as to commend it for trial before resorting to any other plan.

It may here be remarked that the enucleation of the cyst does not in the least interfere with the subsequent adoption of any method found necessary for the arrest of hemorrhage; but careful study of the best methods of enucleation will prevent resort to any other expedient. The methods of enucleation are to be studied, but thus far no difficulty has been encountered in separating the pedicle from the cyst; it is astonishing how readily it is accomplished. The finger is easily inserted fully down upon the cyst, at the base of the pedicle, and the strands or bundles traced out by a gentle lifting process to their final termination upon the sides or walls of the tumour. If any vessel, larger or less corrugated than the rest, should afford troublesome hemorrhage after a few minutes' exposure, it should be twisted after the usual method of torsion for arrest of hemorrhage, or subjected to the action of Dr. Speir's artery constrictor should it prove to act more efficiently than torsion, or if, as might possibly occur, from hasty or imperfect manipulation in separating the pedicle, a larger vessel should be ruptured, a small metal ligature may be applied, and, thus supplemented, *all ovarian tumours capable of removal can be, and I am convinced should be, removed by enucleation.*

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ART. VII.—*Medical Notes on the Upper Amazon.* By FRANK L. GALT, M.D., of Iquitos, Peru.

THE Amazon River, in its course eastward, reaches *Tabatinga*, the Brazilian frontier post, which is two thousand miles from the Atlantic Ocean. From this frontier westward the Amazon is in Peruvian territory, and is known as the *Marañon*,<sup>1</sup> by those through whose country it passes, and keeps this name to its headwaters in the Andes. Some five hundred miles west of the above-named frontier, the *Marañon* receives its largest tributary, whose quantity of water, its navigability, and its running through the same lowlands as the lower *Marañon*, seem to entitle it to be considered

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At the same time that ergotin is being used hypodermically, we may employ the iodide of potassium internally. Since the publication of the results with this agent, by Roberts, of Manchester, and Balfour, of Edinburgh, it has been used with more or less success in the treatment of internal aneurisms. As syphilis appears to be one of the most important factors in the causation of intracranial aneurisms, the iodide of potassium is especially indicated in those cases originating in this way. In order to be effective, this remedy must be administered in large doses,  $\mathfrak{J}$ j to  $\mathfrak{J}$ ij or more, three times a day.

Besides these two remedies, we may employ the galvanic current for the relief of the neuralgia of the fifth, which so frequently attends aneurism of the vessels at the base. A downward stable current, from six elements of Siemens and Halske, gave great relief to Case 1.

The reader may ask what personal experiences I have to offer in favour of this method of treating intracranial aneurism. In one case, in which the character of the symptoms indicated an intracranial neoplasm, most probably aneurismal, I succeeded in procuring marked amelioration, and, it may be cure, by a persevering use of large doses of iodide of potassium, and the galvanic current. I have not reported this with the other cases, because there must ever remain a great degree of uncertainty in regard to the existence of an intracranial aneurism, the actuality of which has not been demonstrated by *post-mortem* examination.

ART. V.—*Hypodermic use of Strychnia.* By JULIAN J. CHISOLM, M.D., Professor of Operative Surgery, University of Maryland; Surgeon in Charge of the Baltimore Eye and Ear Institute, etc. etc.

TWELVE months since I published my experiences with the hypodermic use of strychnia in retinal troubles. Since that period I have used it daily in nervous affections of the eye, with very varied results, at times very striking, again quite negative. In no case has the use of the remedy been followed by any injurious effects, although a few cases were quite susceptible to its toxic influences. I have been surprised to find that in increasing daily the quantity injected under the skin, a much larger amount than that mentioned by the books may be safely administered, with good results. In my early experiences I always commenced with the  $\frac{1}{16}$  of a grain, and slowly increased until  $\frac{1}{8}$  of a grain was used, which latter amount I was afraid to exceed. Now I usually commence with the  $\frac{1}{4}$  of a grain.

The strength of the solution which I use is sulph. strychniæ grs. iv., aquæ dest.  $\mathfrak{J}$ j, each minim containing the  $\frac{1}{128}$  of a grain of the alkaloid. The sulphate of strychnia is quite soluble in pure water, at least to this ex-

tent, and in this strength it makes a very convenient form for administration. For the past ten months I have usually commenced the strychnia treatment by injecting 3 minims of the solution, equal to  $\frac{1}{40}$  of a grain of the drug. If no marked bracing of the muscles, heaviness of the calves, tightening of the jaws, or stiffening of the joints ensues, the amount of the solution for each day's injection is increased by one minim until a maximum dose is finally reached, which is frequently  $\frac{1}{6}$  and often  $\frac{1}{6}$  of a grain. In one case  $\frac{1}{4}$  of a grain of the sulphate of strychnia was injected at a dose, and continued daily, without causing any special annoyance. When in progressively increasing doses the physiological effects of the remedy, indicated by muscular contractions, are excited, I do not diminish the quantity for the next injection, as experience has taught me, that the same dose, when repeated for two or three days, will cease to annoy, and then an augmentation may be safely indulged in. By this methodical and gradual increase, the maximum dose can be attained in from 15 to 20 days. In some cases I have found that the good results are not secured until large doses are reached; simulating, in this respect, the large doses of iodide of potassium, which excites a rapid subsidence in syphilitic symptoms, when ordinary doses of from 5 to 10 grains, continued for a long time, had produced no decided effects.

When the dose of strychnia has attained its maximum, that is to say, as much as can be comfortably borne, it should be steadily persevered in at this strength as long as any improvement shows itself. I have continued the injection of  $\frac{1}{6}$  grain doses for 3 months. Should, from any cause, the daily injection be interrupted, even for a short time, it is not safe to resume the dose left off with, but a smaller quantity should be used, which may be rapidly increased until the full dose is again reached. As with all potent medicines, cases will now and then be met with, in which the commencing dose of  $\frac{1}{40}$  of a grain may prove too powerful. In a single case only have I experienced uncomfortable muscular contractions from this small quantity. The effects in this patient were sufficiently annoying to establish a rule for a cautious commencement in every case. I have heard of one case of marked idiosyncrasy in which a single dose of  $\frac{1}{50}$  of a grain of strychnia (the first), hypodermically used, caused convulsions and insensibility, which continued for several hours. The injection was made by a country physician, and I cannot vouch for the accuracy of the amount injected. In another case, coming under my immediate observation, that of a young lady of nervous temperament, an attack of convulsions of short duration was brought on by the use of  $\frac{1}{20}$  of a grain, which seemed to be the largest dose that she could take with safety. The best results are obtained when two injections are made daily, morning and evening. When it is inconvenient to make more than one injection per day, the effects upon the system may be kept up by the administration of

strychnia pills, first in doses of  $\frac{1}{10}$ , then  $\frac{1}{30}$ , and finally  $\frac{1}{50}$  of a grain each, twice a day.

There is no advantage in injecting the solution under the skin of the temple, or other portion of the head, for the cure of eye or ear diseases, as it causes needless pain to puncture frequently these sensitive surfaces. As the remedy can only act upon the nerves of sight and hearing through the instrumentality of the nerve centres, and by the circulation, I always select the arm as the least sensitive and most convenient seat for the injection. In my experience, the loose skin near the outer surface of the shoulder, or in the upper and outer third of the arm, is the preferable site for the operation. Care must be taken to avoid superficial veins, otherwise bleeding from the puncture annoys, and the arm becomes sore. When the point for throwing in the injection is carefully selected, the puncture should be bloodless.

The canulated trocar of the hypodermic syringe should pass through the skin without resistance. If force be necessary to enable it to reach the subcutaneous cellular tissue, the cause will be found in a blunt heavily shouldered point which needs the cutler's care. As obtained from the instrument maker, the new points are always dull and need sharpening. The necessity for keeping this useful instrument in order is not so seriously felt by those who use it seldom; nor would the pain of application be complained of by persons upon whom it is now and then inserted for the relief of severe neuralgias. When it is systematically used once or twice every day for months upon the same individual, its easy or forced introduction, with the subsequent little or much uneasiness, will be commented upon.

Those not skilled in the use of the hypodermic syringe should, in applying it, first lift a fold of the skin between the thumb and index finger of the left hand, then place the point of the canula at the base of this fold, avoiding visible veins, and thrust it forward until at least one half the thickness of the fold is transfixed. When the canula has perforated the skin and its point lies in the loose cellular tissue in the centre of the fold, all resistance to the onward progress of the point will have ceased. The canula needle will now have gone sufficiently deep under the skin. In the next step of the operation the surgeon lets go the fold and with the same fingers steadies the syringe so that the point may not draw out of the puncture; nor, on the other hand, be thrust too deeply whilst the fluid is being injected. As the injected fluid causes an elevation of the skin, making a little reservoir in the subcutaneous cellular tissues with the puncture as an outlet, it is best by pressure with the finger upon this prominence to disseminate the fluid through the plane of areolar tissue before the canula be withdrawn; otherwise some of the injected fluid will escape, and the full dose not be retained for absorption.

As we are dealing with a very potent remedy, it is the safest course to put in the syringe only the dose to be injected. Some physicians fill the

syringe, and throw under the skin from this quantity the number of minims desired, as marked upon the scale attached to the instrument. Or they screw down the gauge upon the handle and then inject from the large quantity. Should the screw gauge be loose, or the piston work hard, a larger quantity than is desirable will escape through the canula, and an innocent dose may be accidentally converted into a poisonous one by this addition of a few minims of the solution. I adopt the following plan in using the syringe. First, take into the syringe more fluid than the dose to be injected. Holding the instrument with canula upwards, expel all air from the cylinder, and continue to push the piston until all excess of fluid, not required for the injection, is driven out. As I leave in the hypodermic syringe only the dose which is intended to be thrown under the skin, no possible accident can occur.

I have had patients brought to me who had received hypodermic injection at the hands of excellent physicians, and had complained much of the severity of the treatment. In these patients could be traced every puncture by its permanent scar, as if from a boil, in proof that a good deal of painful inflammation must have been excited. This condition could only have been induced by dull needles, or by the use of acidulated solutions of strychnia. The sulphate of strychnia, as already stated, is readily soluble in distilled water for the strongest solutions that should be used hypodermically; and, if the canulas be sent to the cutler's for sharpening as often as surgical instruments should be, the entire trouble which tends to make patients timid would be obviated. When used with the necessary precautions, the instrument leaves so slight a trace that in twenty-four hours the location of the puncture can scarcely be made out. As a rule, no inflammatory redness should follow upon the hypodermic use of strychnia. At times when I have accidentally punctured a small vein, a discolored spot, from blood extravasation, will remain for a few days, and its presence creates some soreness. With proper care this accident should not occur.

Cases in which the hypodermic use of large doses of strychnia will prove useful are quite varied, and their number is daily increasing. In ophthalmic surgery the free use of the remedy is in some diseases curative, in others palliative only.

*Hemeralopia*, even of months' standing, will yield so promptly to a few injections of the sulphate of strychnia that the remedy may be considered nearly antidotal in character, and can be relied on with confidence. I have often observed night-blindness, in recent cases, to disappear after two injections.

In cases of *muscular asthenopia*, from overwork, in which reading becomes painful, with letters running into each other, or in which the letters lose their sharp outline when looked at for a few minutes, equally prompt relief will often follow upon the hypodermic use of the remedy.

In *amblyopia* of recent occurrence, where small objects do not suffi-

ciently impress the retina to excite clear vision, much confidence can be placed in strychnia.

In *tobacco amaurosis*, I have met with a decided and prompt response from the use of the syringe.

A case in point just dismissed from treatment was that of Mr. R., whose vision for the last three months has been steadily and perceptibly decreasing—cause, excessive use of tobacco—general vision misty, both for near and distant objects. Has been forced to give up newspaper reading. After the daily use of strychnia for two weeks, he could read "brilliant" type, which is the finest print.

In *progressive nerve atrophy* not dependent upon intracranial trouble, there is no remedy, that I am aware of, which will give such satisfactory results. In white atrophy the effects are varied; at times useful sight is restored; whilst in others, equally promising at the commencement of treatment, the effects are negative even after a careful and continued use of the remedy in full doses.

A gentleman now under treatment, a case of white atrophy with chalky disks and threads of vessels, was treated by me ten years since for the same trouble, and his case was then deemed hopeless. He could distinguish objects when brought very near to the eye, and held towards the temporal side. For the past ten days he has been taking hypodermically large doses of strychnia, and, by the use of test objects, notes a daily improvement, being able now to distinguish a door knob sixteen feet off.

In *amblyopia*, connected with choroidal atrophy, whether there be large crescents or a spotted fundus, I have observed the vision to be permanently sharpened under the hypodermic use of strychnia. In fact whenever the retina or optic nerve needs stimulation to correct defective vision, the subcutaneous injection of a solution of strychnia will be found of benefit.

As strychnia exhibits an indirect influence over the contraction of bloodvessels, its hypodermic administration may be found of great value in cases of intra-ocular congestions, especially glaucomatous conditions, where its action, by relieving the distended bloodvessels—and thereby diminishing

obviate the necessity of an operation upon the eyeball. I forecase of *acute glaucoma*, in which prompt relief is said to be afforded by the hypodermic injection. Sufficient experience has been gained in the congestive cases to induce a reliance upon a further experience in the use of strychnia in glaucoma. The application of the drug in the relief of other eye troubles, and its application will be hailed as one of the most valuable in ophthalmic surgery.

ART. VI.—*Ovariectomy by Enucleation, without Clamp, Ligature, or Cautey.* By J. F. MINER, M.D., Professor of Special Surgery in the University of Buffalo, Attending Surgeon to the Buffalo General Hospital, and to the Hospital of the Sisters of Charity.

IN proposing a new method of procedure in so important an operation as ovariectomy, it is quite becoming, at least, to state the facts upon which the proposition rests, and leave others to draw their own conclusions.

During an active surgical practice of twenty-five years, I have been in the constant habit of enucleating solid and cystic tumours from all the important surgical regions, following in this the example and teaching of surgeons generally. We have all felt a safety when attempting to remove these morbid growths, if we could find a well-marked boundary where the morbid could be separated from the healthy tissue, by the finger or handle of the scalpel; indeed, but for expectation of finding a well-defined boundary to be thus broken up, the removal of many of these tumours would never be attempted. Surgeons have always, so far as I know, been in the habit of *enucleating* all other tumours, not inextricably joined to the surrounding tissues, so that, upon a little reflection, it will appear strange that it should not earlier have been tried in ovariectomy, rather than that it should now be proposed and urged upon the profession for trial.

No surgeon in the world was ever more surprised at what he had done than myself, when I found that I had removed a large ovarian tumour without ligating a single vessel, and without any hemorrhage worthy of notice.

My first observation and experience in this procedure occurred in April, 1869, and the case was reported in detail in the *Buffalo Medical and Surgical Journal* for June of the same year.

I was invited to remove an immense ovarian tumour of two years' growth, which had been repeatedly tapped, but the contents at length proved too thick to be drawn through the largest sized canula, and, distress becoming too great for endurance, any operation which would end it, whatever might be the result, was gladly accepted. The tumour was multilocular, weighing, as near as could be determined, one hundred pounds. It was attached throughout its entire circumference to the omentum, intestines, walls of the abdomen, and all other parts with which it came in contact. These attachments were not so firm but that they could be broken up, and with great care the tumour was separated from the surrounding parts until the pedicle was reached. The process of enucleation had been carried on so successfully and so extensively, that encouragement was afforded for continued trial. The pedicle was large, and extended over a wide surface, but by careful and patient effort, it was separated from its entire attachment to the tumour, and the immense growth removed without the ligation of a single vessel. The terminal branches of the vessels of the pedicle gave out no more blood than issued from the vessels of the

attachments elsewhere, and there appeared no more occasion for ligature here than elsewhere. All hemorrhage soon ceased, and the incision was closed by interrupted suture. The success of this procedure was complete, and the patient continued to improve, declaring herself quite well at the end of about two weeks, without having had an unfavourable symptom. She now commenced to lose her relish for food, grew weak and desponding, and died from exhaustion on the twenty-first day after the operation. The fatal termination detracted nothing from the success of this mode of treating the pedicle; indeed, so remarkable was the size and attachment of the tumour, that any attempt at recovery was surprising, and yet the feeble, emaciated, exhausted patient continued to live long enough to show that this manner of treating the pedicle was, at least in her case, unobjectionable.

The second opportunity I had of testing the feasibility and safety of the plan, was in the case of a German woman, aged 66, in the Buffalo General Hospital, during December of the same year. She was of feeble and delicate appearance, and considerably emaciated. The operation was made in presence of the students of the Buffalo Medical College, and many physicians, and I was assisted by my colleagues, both of the College Faculty and Hospital Staff. This tumour was found also attached to the walls of the abdomen and omentum, but the adhesions were readily broken up. The cysts were emptied to some extent, and the tumour raised from the cavity of the abdomen. On reaching the pedicle it was found large, its principal arteries throbbing distinctly. Commencing at the base of the pedicle, the fingers underneath all, it was gently separated or torn from the cyst, following out the vessels to their final termination, as they extended over the walls of the tumour. Upon removal it was found to weigh seventy-one pounds, and to be composed of numerous cysts. The bands of vessels composing the pedicle, when separated from the tumour, contracted so as to corrugate the vessels, and leave the pedicle appearing almost as if divided by a knife. To the surprise of my associates, little hemorrhage followed the operation, less than attended separation of the bands of attachment elsewhere. She recovered from the anæsthetic, received the congratulations of her friends, and seemed very comfortable. By misunderstanding of attendants she received, after four hours, a second subcutaneous injection of one-half grain of morphia, and soon appeared as if narcotized. From this she could not be aroused, and she died eighteen hours after the operation.

clamp, cautery, and ligature, and really have no pedicle, may naturally appear startling to surgeons who have tied large vessels in the operation, or have witnessed the fearful hemorrhage which sometimes takes place from slipping of clamp or ligature; a moment's reflection will, however, remove the surprise. The ovarian tumour is composed of a firm, dense, fibrous cyst, containing fluid of varied colour and composition. It may, and it may not, have a solid portion, but usually it does have more or less of the latter, and it is often divided into numerous smaller cysts—cysts within cysts. Externally it has this dense, firm covering, and the vessels which sustain the growth enter it, if at all, only of capillary size. The attachment of the pedicle to the cyst is much more easily broken than any one would suspect who has not attempted its separation in the manner described. The same efforts which are made to separate the adhesions elsewhere, if extended to the pedicle, will be found equally successful. The finger should be introduced under the central portion of the pedicle, fully down upon the cyst, and by a gentle elevation followed out along the fasciculi of vessels as they extend over the walls of the tumour; nothing can be more easy of execution, or more readily accomplished. Other similar cases might be related, but I choose to refer to the experience of others in confirmation of my proposition, rather than multiply cases of my own. Prof. Thomas, in his recent work on Diseases of Women, states:—

“I have resorted to this method advised by Dr. Miner, of Buffalo, N.Y., three times, with good results, in cases which would have proved unmanageable by other means. . . . It appears to me to be the most valuable of all the contributions to ovariectomy which have emanated from this country.”

Richard H. Meade, Esq., Consulting Surgeon to the Bradford Infirmary, England, relates a case in which he performed ovariectomy, and observes:—

“When I commenced the above operation I had no idea of imitating his [Dr. Miner's] proceeding, but when the tumour (to my horror at the time) enucleated itself, and there appeared to be no bleeding from the pedicle, I determined to follow his example, and leave the torn surface unsecured, thinking that the risk from hemorrhage was less than that from inflammation from the presence of a foreign body in the peritoneal cavity. My case turned out successfully, and I think I should venture to repeat the proceeding in some special cases.”  
—*Brit. Med. Journ.*, November 26, 1870, p. 577.

Thus it will be seen that the experience of other surgeons was early found to agree with my own, and my convictions of its safety and propriety strengthened. More recent observations have confirmed and made it, I think, *certain* that ovarian tumours can be removed as other cystic tumours are removed, by *enucleation*, that is, by separation from the vessels and tissues by which they are surrounded and nourished, that it can be done without hemorrhage, and without ligation of vessels, thus avoiding many of the dangers attending the operation, such as secondary hemorrhage, as where large vessels are ligated or secured by the clamp; the *débris* of burnt tissue, as a source of peritoneal inflammation, where the cautery has been employed; the decomposition of parts strangulated beyond the liga-



ture, when all is returned into the abdominal cavity, or the keeping open of the incision if the pedicle is placed in the lower angle of the wound; in a word, avoiding all the difficulties and dangers attending the treatment of the pedicle.

At the risk of being tiresome to my readers, I will refer to some of the particulars of my last operation, as it illustrates what may be hoped for in this method of removing these growths.

My friend Dr. S. F. Mixer, of Buffalo, who had already become familiar with this plan of operation in ovariectomy, invited me to remove an ovarian tumour in May last, from a young lady 22 years old, of nervous, delicate temperament. The growth had been noticed for only about six months; consequently was rapid in formation, and exactly the kind to test, so far as any one case could test, the safety of enucleation. After the patient was fully under the influence of chloroform, an incision about four inches in length was made, exposing the tumour. The body was found directly under the incision, and was attached to the walls of the abdomen for a diameter of four or five inches. This being separated, a large trocar and cannula were introduced, through which the contents of the cyst escaped, and the tumour was drawn through the opening and raised from the cavity of the abdomen. The pedicle was now carefully separated from the cyst, beginning at its central portion and peeling the vessels and tissues by which they were surrounded from the walls of the tumour. This was readily effected, and the tumour, weighing eighteen pounds, removed. Two small vessels bled a little, and torsion was made with artery forceps. No further hemorrhage, indeed no hemorrhage worthy of mention, attended the separation, which would not have ceased spontaneously in a few minutes. The abdomen was sponged of all blood, serum, and such contents of the cyst as had escaped, and the wound closed by interrupted silver suture, supported by adhesive strips passing around the body, and the patient placed in bed. She vomited that night several times, apparently from the effects of the chloroform, which, with the anxieties of the operation, increased the pulse to 120 per minute. After this subsided, or after the first forty-eight hours, the patient had no further symptom of disease, pulse became natural; appetite good, expression cheerful; no pain, tenderness, swelling or suppuration followed. The patient was not made ill by the operation.

removed, not only by this but by all other methods of operation. The "exploratory incision," so called, will remain, as expressive of a condition of things not anticipated by the surgeon, so long as it remains impossible to make in all cases positive and definite diagnosis; but it is believed that all ovarian tumours capable of removal can be removed by the method proposed, with advantages so manifestly superior as to commend it for trial before resorting to any other plan.

It may here be remarked that the enucleation of the cyst does not in the least interfere with the subsequent adoption of any method found necessary for the arrest of hemorrhage; but careful study of the best methods of enucleation will prevent resort to any other expedient. The methods of enucleation are to be studied, but thus far no difficulty has been encountered in separating the pedicle from the cyst; it is astonishing how readily it is accomplished. The finger is easily inserted fully down upon the cyst, at the base of the pedicle, and the strands or bundles traced out by a gentle lifting process to their final termination upon the sides or walls of the tumour. If any vessel, larger or less corrugated than the rest, should afford troublesome hemorrhage after a few minutes' exposure, it should be twisted after the usual method of torsion for arrest of hemorrhage, or subjected to the action of Dr. Speir's artery constrictor should it prove to act more efficiently than torsion, or if, as might possibly occur, from hasty or imperfect manipulation in separating the pedicle, a larger vessel should be ruptured, a small metal ligature may be applied, and, thus supplemented, *all ovarian tumours capable of removal can be, and I am convinced should be, removed by enucleation.*

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<sup>1</sup> The altitude of the *Marañon* above the sea level is not accurately given as yet, though about three hundred feet for its lower third, and probably reaching as high as four hundred or more, below Borja. I do not speak with much certainty on the subject as yet.

a continuation of the Marañon itself; but which is known locally, and on the maps, as the Ucayali. At some two hundred miles west of this river the Marañon reaches the spurs of the Andes, at or near Borja, through which it rushes with great rapidity, and above which there is no navigation but for canoes. On the Ucayali, however, the steamers have gone as far as the junction of the Tambo and Urubamba rivers, some nine hundred miles from the Marañon. A few miles up either of the streams mentioned the hills again make navigation impossible, and the rivers degenerate into mere mountain torrents. It is of the valleys of these two large water courses, the Marañon and Ucayali, that the following notes are designed to treat.

The basin of the Ucayali extends to the west at varying distances, from fifty to one hundred and thirty miles, up to the foot of the eastern Cordillera of the Andes, and it is known generally as the *Pampa del Sacramento*, the name being given by the old Franciscan friars, in their voyage through this wild region, some two hundred and forty years ago. This pampa is said to be a low, wooded country, extending some one hundred miles from north to south, in a general direction. To the east, the basin of the Ucayali extends for hundreds of miles, forming, with the basins of other lesser tributaries, what is known as the *Montaña*, or "wooded country," which is but a continuation of the great Amazon valley of Brazil to the east. The basin of the Marañon extends on the north side of the river some one hundred or two hundred miles, variably, into the mountainous region of Ecuador. West, as before said, the mountain passes begin at Borja, and to the south the Marañon basin may also be considered as that of the Ucayali. The Marañon has a general east and west direction, and is included between  $3^{\circ}$  and  $5^{\circ}$  south latitude; and the low country of its valley may be included between  $70^{\circ}$  and  $76^{\circ}$  west longitude. The Ucayali is included between  $4^{\circ} 30'$  and  $9^{\circ} 40'$  south latitude, and its lowlands between  $74^{\circ}$  to  $76^{\circ}$  west longitude, on the west, and indefinitely to the east where continues the Amazon basin. Over this immense tract of over one hundred thousand square miles nature runs riot in her wanton luxuriance, and where man appears he is an exotic, though he may be "to the manner born." It is one rank waste of woods and water which, located mostly within the "zone of constant precipitation," enjoys all the glorious privi-

which are those which blow over all the Amazon valley as far as the Andes, are lighter and more irregular; the atmosphere is heavily charged with constant moisture, giving to one's body a feeling of warm humidity which is sufficiently disagreeable; shoes mould within forty-eight hours; watches and other instruments become seriously corroded; and medicines, particularly powders and salts, are with great difficulty kept fit for use. The temperature is not so oppressive from its elevation as in the dry season, though the bodily discomfort from the feeling of dampness is probably greater, and the tropical languor is more irresistible, from which, however, one is aroused by the disgusting necessity of an almost incessant war against the inevitable mosquito, whose paradise is all over this section of earth.

The rivers, which begin to rise about October, continue to increase their flood—with the exception of a short standstill or slight fall about December—until May, and during the height of the season, from January to March, the country for miles along the lowlands calls to mind the primeval deluge, which was just now being drained off the earth's surface. Decaying vegetation, undermined banks, tumble headlong, and are swept on the flood, and a dirtier mixture of mud, leaves, trees, broken or entire, cannot be found on the planet than the "king of rivers" presents at this time. Still, there are noble uses in the vilest pictures sometimes, and these sweepings of the watery scavenger are one of the modes by which nature makes pure the air, by removing the festering mass of decomposing materials, washing out the stagnant water sinks, and thus adding the strangeness of health to the jungles of the Amazon valley. The Indian who has spent the dry season on the lowlands or "plaias"—sand flats—curing his fish, or catching the turtle, now retires before the coming flood, and perches himself on some red clay bluff here and there on the river margins, the wild animals hasten to the interior high grounds, the woods become silent, except to the lofty-roosting bird, and the traveller who drifts down this yellow road of liquid mud becomes almost oppressed with the calm supremacy of the silent waters. About May the waters subside, the rains diminish, the air becomes drier and warmer, continuing so up to October; the mercury, however, rarely having a daily average of  $29^{\circ}$ , and still less frequently does it reach  $30^{\circ}$ .

At this season we now find the southeast winds more frequent, giving always an agreeable depression to the mercury, the atmosphere of the mornings and evenings generally more clear, and the tropics show all their beauty of leaf and starlight. In June, generally about the 25th, there supervenes a "cold spell," comparatively speaking; cold for the natives, when the mercury for three or four days sinks at night as low as from  $22^{\circ}$ – $19^{\circ}$ . So great is even this moderate depression that the natives shiver with the change, nor is the stranger beyond the reach of this impression of chilliness. This change is always known here as the "*invierno*" de

*San Juan*—"the little (or short) winter of San Juan," because that saint's anniversary falls on the 24th of June, the time about which this cold comes on. This cool change is also one of the noted facts of the lower Amazon as well, where the Portuguese know it as the "*tempo da friagera*"—"the time of cold"—and Bates, the English naturalist, who laboured for many years successfully on the lower Amazon, thinks it to be caused by a continuous cold wind blowing from the south over the damp forests that extend from north of the equator to 18° south latitude, when it is winter in the southern hemisphere; and the cool currents of air travelling north to the equator become only moderately heated in their course, owing to the intermediate country being a vast, partially flooded plain, covered with humid forests. The warm winds of this dry season are from the north-west, which make the air very oppressive, though the great heat is only for a short time, passing off in squalls, attended with thunder, lightning, and light rain. In July, August, and September the variations in the thermometer are greatest, and in these months is encountered the extreme range for the year—from 19° to 29°. In these months, too, more especially June and July, will be noticed fogs, which, however, disappear by 8 A.M. always, leaving the sky clear and bright. The average of annual heat for the whole Amazon has been estimated at 26°. On the Marañon, probably it is some one or two degrees lower. This moderate elevation for a tropical region enters into the elements of present healthfulness of this country.

Such is a brief outline of the topography and seasons of the basin of the Marañon, or the Peruvian Amazon. With such uniformity of temperature, and regularity of seasons, if the two changes of the year may be so called, there is in the diseases of this district a certain characteristic of sameness also to be noted, the features of complaints being distinctive, and not often varied. In the order of frequency the diseases may be mentioned as occurring thus: *Skin Affections; Geophagy; Malarial Fevers; Severe Colics; Trismus Nascentium; Abscesses.*

But before sketching these it may be well to give some notes on the different nationalities, or representatives of man, one finds on the Marañon. And first in point of numbers and possession is the Indian, who lives scattered very much about the river margins, the interior of the Montaña itself being entirely too dense a vegetation to permit man to move about even a foot—the water-courses being the only highways of that region. The South American Indian, particularly the one living under the tropical skies, is a different character from the obstinate "patriot" of our western reserves, or the bold and tenacious Araucanian of Chili, or the Bedouin-like wanderers on the northwestern plains of the Argentine Confederation. Born in a sweltering climate, with impenetrable forests to defy even stealthy tread, with alternate deluge to drive him from his anchorage, the Marañon red man lives, as it were, apart from the nature which is con-

testing his natural right to soil and life. He is not a gregarious animal ; but lives in detached families,<sup>1</sup> or at most where two or three households are collected. He moves from his dirty hut to spear the fish, to overturn the turtle on the bank, or to enjoy the amiable diversion of stealing an additional wife or child from a neighbouring tribe; and is altogether totally negative in his virtues, though positive enough in his vices. The lazy stroke of the paddle is his only vigorous exercise, and, without the warlike virtues of the red man of the colder climes, his whole anatomy exhibits a heavy, flabby, unimpassioned physique, which has some effect on his case when diseased. The want of resistance to circumstances about him, the want of numbers, the want of mobility, as it were, has made the native Indian of the Amazon valley always appear as a stranger here on his "native heath."

Next in point of numbers is the white Spanish-Peruvian, who, with the Indian, forms various grades of blood-relationship; the white man being the trader or the governor of the district, and now and then the *padre*, of an uncertain extent of leagues up or down the rivers.

Rivalling these in point of numbers is the Brazilian or Portuguese trader, who makes his way up from the lower Amazon and locates at the various villages, intermarrying with the half-breed Indian, or bringing his family with him. The Portuguese are the most industrious of all the populations on the whole Amazon, and generally the most healthy. The energy of this people, wherever found on the Amazon, has often been the subject of remark, and they seem still to carry about the vim of a Vasco de Gama in their wanderings. The contrast between them and their kinsmen, the pure Brazilian, is very great. At Iquitos, which is the largest town on the low countries of the Marañon, or the Ucayali, and which is the government headquarters of the Fluvial Department of eastern Peru, are to be found seventy or eighty Englishmen, who are employés in the public workshops; some of them having their families with them—and they form the largest body of Anglo-Saxons on the whole length of the Marañon. Besides these larger groups of nationalities, is to be seen an occasional Yankee, who, by-the-by, does not appear in this district to be much of a developer of ideas of any sort; and a German here and there seems to be "looking out for a good opening," as also is the stray Frenchman. Of all these diverse representatives, the Portuguese and the half-blooded Spaniard-and-Peruvian seem to live more as though they were not striving against circumstances; the Indian appearing almost as foreign as the white Spanish-Peruvian; neither showing resistance to climate or inertia as well as the mestizos. Rarely may be seen a *zambo*<sup>1</sup>—the mixed blood of

<sup>1</sup> The "*zambo*" in Peru is the offspring of the white and the negro; but in other parts of South America this cross is known as the "*mulatto*," while the "*zambo*" properly is the child of the native Indian and the negro. Some in Peru use this latter cross to define the word "*zambo*," however.

white and negro; but he is generally a stranger from the interior, or the Pacific coast, where his people make up a large class of labourers and soldiery. The Spanish-Peruvian, especially the children, are a singularly sprightly people, of high nervous excitability, spasmodic in their endeavours, but easily tired of work, mental or manual; they idealize a great deal, and have a good deal of the vague relics of imperialism of palmier days lingering about their pride and indolence. The Portuguese is dull, as regards *esprit*, but of toiling energy, and lives more uniformly and without the disposition to paroxysmal excitation of his conqueror.

In estimating symptoms of diseased action, these peculiarities of race must enter largely into the phenomena which any particular complaint may exhibit. In the Indian, the first impressions of sickness produce an apathy or inability to care for his own condition, which forms a troublesome part of the physician's care. Of course, where a stranger is the medical attendant, there is added to this constitutional apathy an extreme, though very natural, want of confidence in the stranger and his remedies, and it is almost useless to leave medicines to be administered—the doctor has to see them given in his presence if he wishes to accomplish anything.

Accustomed to the use of the native remedies of their forests, many of which are very efficacious in the tropical complaints, and looking upon a request to put out the tongue, or an attempt to feel the pulse, or any other cabalistic demand, as a species of sorcery different from their own and generally to be resisted to the death, the system of "heroic guessing" not unfrequently enters largely into the opinion one may form of the patient under consideration, especially where affections of the chest are supposed to involve a necessity for physical examinations. To this there is, in the case of the Indian, added unusual excitability of the nervous system, which lends to his want of confidence additional obstacles, and not unfrequently this compound of fright and nervous exaltation suddenly deprives the doctor of his patient, who may have incontinently put off for the "bush" to escape the "foul fiend," be it the disease or the "medicine man." The poverty of their diet, which consists only of dried fish and plantains, makes proper aliment impossible, and should a more appropriate diet be suggested, very likely the poor fellow returns to his homely fare all unmindful of bad consequences.

The excitability of the nervous system is observable in all castes of the native population, and the foreigner of some years' residence also notices this somewhat in his attacks of whatever disease. In the white Peruvian or Portuguese there is superadded to this nervous condition an ease with which the system seems to go down under slight attacks, and a great languor of strength and appetite in convalescence, which makes recovery tardy in this humid atmosphere, and the results often not as satisfactory as could be wished. Among the women of these races, their now and then irregular tastes, as regards unusual and unwholesome articles of

food during convalescence, still further increase the trouble. In this connection it has occurred to me that probably here the universal custom of all ages, sexes, and classes of society, of the use of tobacco—by smoking—should be included as among the prominent depressing causes. The tobacco of Peru, which is that used by every one on the Marañon, is greatly stronger than the Virginia or the Havana, so much so as to make old smokers of these varieties completely and steadily nauseated for a long time after they try the Peruvian leaf. This tobacco, used mostly in the form of cigarettes, is the constant companion day and night of the Marañon people, particularly the whites and mestizos. Beginning at the early age of four or five years, this habit is pursued from dawn till midnight with an assiduity worthy of a better object. Before the morning cup of coffee is the cigar, and the last turning over in bed is to throw away the last cigarette. I have never seen among the most inveterate “chewists,” or smokers of the “Old Dominion,” a more thorough slavery to this “soft, guileless consolation” of the grown males—the young and the fair of our land, of course, being out of the question. It is difficult to believe that such powerful agents do not contribute to unnatural impressibility and tendency to depression of moral and mental as well as physical exertion, which in the tropics add to climatal causes of disease very considerably.

The women very commonly suffer from the results of ignorance and imprudence at the monthly periods, and leucorrhœa and uterine irritation are among the most frequent of the Marañon complaints, and with difficulty managed. The atonic condition of mucous membranes here, among other modes, shows itself in these and other blennorrhagic discharges. Often among children, especially females, at early ages of life, one encounters annoying fluxes, which give a good deal of trouble in their cure. Generally speaking, the prostration from attacks of disease is greatly disproportionate to the apparent violence of symptoms. And probably this is more to be noticed among the Anglo-Saxon element and his “cousin” of the United States than among the Latin descendants, on account of previous robust health and power of resistance to the usual causes of depression.<sup>1</sup> The Latin bends easily to the storm, but lives along, apparently, better in this depressed condition than the Englishman, who breaks up more hurriedly after he has once experienced severe disease: yet on his recovery he is

<sup>1</sup> It has long ago been observed that the foreigner stands tropical heats for a while better than the native; but that in the long run there is a progressive descent downwards. Statistics of a governor of Cayenne, in 1742, give the following mortality during his administration of that colony for a period of nine years.

Proportion in one thousand colonists.

1st year,	2d,	3d,	4th,	5th,	6th,	7th,	8th,	9th.
15	19	42	21	60	75	82	102	125

In many cases allowance has to be made, however, for the character of the colonists, who are frequently the bad and abandoned, morally as well as physically.



more restored to his former condition than the Latin under equal circumstances.

*Skin Diseases* are entitled to rank first, not only from their frequency, but also from the obstinate character of their duration. They are grouped together by the people under the general name of "*Sana*," which includes every form of discolouration as well as eruption. These affections of the skin are due not only to the excessive labour of transpiration required of the porous surface of the body, which after a while debilitates it and produces an obscure irritation, leading to indolent ulcerations or eruptions; but they are also the irritations arising from the bites of myriads of insects which infest earth, air, and water. Among the natives, pure and mestizo, one will see the whole exposed surface of the body pitted with inflamed bites, to remedy which they use vegetable dyes, which go under the general name of "*Huito*," generally of a bluish-black or reddish color. These dyes, besides stopping the pores of the skin, are themselves irritating. It is, however, noticed on the Amazon that the red man of this river basin is a very slight sweater—a fact that has always attracted attention. One will sometimes find the skin of the Indian rough, hard, and insensible, like the skin of the larger lower animals.

Next to the Indians who suffer from these skin affections, are the English and Anglo-Americans, who bring to this moist country a well-toned system and appetite, and who generally have to pay a severe toll for a long time after their arrival by being the victims of numberless boils or ulcers about the person. This might often be avoided by lessening the amount of heat-making material which they too generally seem to think necessary. The Spanish-Peruvian or the Portuguese avoids this tendency best—the relaxed fibre, rather more regular and temperate appetite, and the thin-blooded nature of the race making him less susceptible to acute inflammation of the skin or abscesses; though there is a strong tendency to serofulous sores and "cold abscess," among them, which are hard to manage.

Leprosy, properly so called, is a stranger on the Marañon, though it prevails largely in other parts of the great Amazon valley, near the mountainous districts of Matto-Grosso, and Minas-Geraes, in Brazil. The English or American generally recovers easily from this deranged condition of the transpiratory surface after leaving the climate, and here it may sometimes be considered a providential outlet which has saved some organ from a destructive inflammation. One of the most annoying of the skin affections is an itching of the surface of the body, apparently not attended by eruption, though the almost irresistible tendency to scratch the part affected will give rise to more or less superficial irritation. The hyperæsthesia of the skin is noticed more among the strangers, and gives the notion of a "prickly heat," without the eruption. It is sometimes intolerably annoying, not only from its itching, but from the dread one has that rubbing the part may cause irritable superficial ulceration. Ulcers resulting from the

various skin irritations are apt to be indolent and difficult of cure, though in a healthy constitution there is no degeneracy in the type of inflammation. The old women cure these remarkably quick sometimes by the application of a compound of which the balsam of copaiba, recently gotten from the adjoining forest, is the principal ingredient. I noticed on the whole Amazon the frequent use of the copaiba as a stimulating dressing to indolent ulcers or half-healed wounds, and its good effects are of frequent occurrence.

Of all the diseases one encounters here, which is to be particularly noticed for being somewhat out of the general range of professional notice, is the strange one known as "dirt eating" ("*geophagie*," "*mal cœur*," "*mal destomes des nègres*," "*erdessen*," &c.), and noticed by the French more technically under the head "*cachexie aqueuse*." In De la Chambre's "Encyclopædia" the reader will find the subject fully and fairly treated of. According to some writers, this disease had its beginning on our continent in the palmy days of negro trading on the African coast, when it was transplanted to American shores, and it now enters as one of the chief endemic complaints of all tropical America, and at this distance of over two thousand miles from the sea, on the Amazon valley, where the negro is a rarity, being merely a waif from Brazil or the Pacific coast, it is the most important disease among the children and women of the country. Here, on the Marañon, the half-breeds are mostly addicted to the practice of dirt eating—neither the pure brute of a savage nor the more cultivated being so often the victims. Among that class, when it does prevail, it is a devouring passion, which is truly remarkable. Even strangers, English, or the white Peruvian, who have married with the mestizo, and have had children by them, find its presence among their little ones the plague of their life; and the accounts one hears about the tyranny of this habit of dirt eating on the victims of it would seem almost fabulous, were there not evidences all around one to give sanction to them. Children commence the habit from the time they are four years old, or less, and frequently die from the results in two or three years. In other cases, they grow to manhood or womanhood with the "appetite growing by what it feeds on," and I have seen here myself, in the case of a mestizo soldier, who was dying from the dysentery which generally, sooner or later, supervenes on this habit, the poor creature, half an hour before his death, detected with a lump of clay stuffed in his sunken cheeks, which he had dragged from the wall near where he was almost breathing his last. Officers here who have the Indian or half-breed children as servants in their employ sometimes have to use wire masks to keep them from putting the clay to their mouths; and women, as they lie in bed sleepless and restless, will pull out pieces of mud from the adjoining walls of their room to gratify their strange appetite, or will soothe a squalling brat by tempting it with a lump of the same material. If persisted in, the effects are surely fatal, at varying terms of years,

some living tolerably to middle age, and then dying with dysentery, or from that disease at an earlier period. In the children dropsy is usually the most prominent apparent cause of decline and death.

Various have been the causes assigned for this unnatural appetite, and the obscure intervention of anæmia and decline. I have not as yet had an opportunity of detecting whether the nematoid worm, "*ankylostome duodenal*" is the *fons et origo* of this complaint, though its presence in the intestinal canal has been so repeatedly determined by observers that I feel assured of its presence. Locally, among the people, one hears poor diet and a craving for a change urged by victims, as well as observers, as an exciting cause of this practice, and the presence of the worm would very naturally follow on a practice so dirty as this.

The sequelæ of this geophagy—anæmia and dropsy—are now, I believe, generally supposed to be consequent on the abstraction of blood from the intestinal walls. I do not know that the administration of vermifuges has ever been practised with a view of getting rid of these animalcules, and, as far as my own experience and observations go, the only thing done for this cachexia is the administration of astringent tonics, and the giving of advice about diet, which, however, amounts to little or nothing; the patients disappear after a greater or less time, disgusted with the stranger's physic and admonition. The unnatural cravings of a diseased appetite are often not limited to dirt merely, but the most *outré* articles that can be thought of—coal, cigar ashes, plaster—enter into their fanciful minds, and I was assured here by an officer that in the case of an Indian girl nearly grown, who was punished for the habit by being confined in a room where her meals were regularly placed, the paper about the walls, the straw of the mattress, linen hanging about, all seemed more attractive to her palate. The most fanciful suggestions of pregnancy—which was not her condition—could not have equalled this poor girl's deranged appetite. It is almost needless to add that treatment in this complaint is nearly useless unless the habit is corrected, and even then the system has been too much undermined often to make remedies of much avail in restoring either healthful looks or action in the economy. I am told that parents often encourage their children to smoke tobacco at the early age of five years, as it seems, they say, to do away with the fondness for dirt eating. They have never been able to give me a reason for this fact, nor do I find myself able to solve the question, except, possibly, on the ground of an anæsthetic effect on the palate, and depression of desire to eat anything. The habit of dirt eating obtains also largely in some of the Piedmont districts, many of the children and women from Moyobamba and Tarapoto, and other towns, coming here with this practice deeply rooted.

*Dysentery*, as an original disease on the Marañon, is of comparatively rare occurrence. It more generally appears as a sequela of the "geophagy." If original, it does not seem intractable, and is to be encour-

tered oftener among the children or foreigners. On the lower Amazon, and on the Brazil coast generally, its rank, according to some observers, is next after phthisis. The moderate elevation of the thermometer in this tropical section, compared with it on the coast, the greater uniformity of the average animal heat, sudden changes, as before stated, being rare, the sparsely-settled nature of the villages not giving rise to such excesses from want of material wherewith to disturb the system, probably may be considered as operating causes of its rarity; though, as yet, the difference in amount of population on the upper and lower Amazon makes one liable not to take into consideration relative numbers in estimating frequency of disease. The total want of statistical information in this country makes the question of healthfulness somewhat uncertain, as yet. There is not in the dysentery itself anything particular to notice as regards symptoms or treatment. I have as yet seen no fatal case where the affection was uncomplicated with "dirt eating," or extreme imprudence in dissipation. The foreigners living and trafficking on the Marañon have enjoyed singular exemption from this affection. In children, the very common carelessness of parents as regards diet will account for most cases among the young.

After having in our earlier days read of the horrible jungles of the tropics, and later been lectured on the disasters of tropical residence in the wilds where the monkey, tiger, or anaconda alone is acclimated, the medical traveller is more than surprised at the infrequency of *Malarial Fevers* on the whole Amazon, in whose dense forests nature now "wanton[s] as in her prime." Coming out to a section of the earth whose foreign reputation makes it apparently the home of everything pestilential in the way of febrile affections, the first thing he hears on the subject, on the lower Amazon, is the repeated statement of the rarity of these disorders on the main river, and as he travels west to the Peruvian territory on the continuation (the Marañon) of the same stream, the experience of those with whom he may have conversed on his way up assures him repeatedly of the truth, which after awhile his own experience in a great measure will confirm. He will also find that the native red man is less able to resist these malarial fevers and disappears more easily than the white or negro. But, when the wanderer leaves the main river and betakes himself to the higher grounds of any of the tributaries of this huge watery cormorant, where he begins to encounter rocky beds to the streams, rocky sides to the rivers, a comparative slight chilliness of air in the mornings and evenings, with a greater frequency of fogs, while the midday is a glowing heat—there begins the "*Terçiana*," as the malarial intermittents are called.<sup>1</sup> In the interior,

<sup>1</sup> Bates, the naturalist, speaking of the healthfulness of the main river of the Amazon, and the country on the tributaries, says: "I began now to understand why the branch rivers of the Amazon were so unhealthy, while the main stream was pretty nearly free from diseases arising from malaria. The cause lies, without

too, about the low grounds bordering the Piedmont districts of the Cordilleras, or on the water-courses of this section, these affections are also to be encountered. Excessive dryness and excessive moisture both seem to prevent the accession of the malaria. The interior wooded lowlands, through which the sun has not shone for ages, are as free from malaria as the mountain tops. Besides this unsunned condition which prevents evaporation, being one cause of exemption, the heavy rains and the flooding for several

doubt, in the slack currents of the tributaries in the dry season, and the absence of the cooling Amazonian trade wind, which purifies the air along the banks of the main river. The trade wind does not deviate from its nearly straight course west, so that the branch streams, which are generally at right angles to the Amazon, and have a slack current for a long distance from their mouth, are left to the horror of nearly stagnant air and water." This may apply, possibly, to the lower Amazon, but on the tributaries of the alto-Amazonas, where the currents are stronger all the year round than those lower down are at the rainy season, you find the intermittents to prevail—nor is the trade wind either as certain or as strong as below. And it may probably be true that the borders of the Amazon are constantly kept swept by the rising floods, which carry off the decaying material which might engender the malaria. It seems to me that with the impenetrable mass of vegetation as ramparts, as it were, on the banks of the Amazon, and for leagues to the interior, the trade wind could make little success in getting through this to ventilate the shores at sufficiently low an elevation from the river margin to prevent malarial emanation from affecting those who would necessarily sleep or work a very few feet above the level of the stream itself. It is a fact noted both by Darwin and Humboldt, in their travels in Peru and other tropical places, that there was to be encountered a greater prevalence of malarial emanation in those districts where there was a dry soil, generally sandy, short grass growing thereabouts, and stagnant pools, as about Arica, Callao, Vera Cruz, Carthagena, and such like localities. It may, therefore, be, that, toward the headwaters, or the higher inland regions of the Amazon tributaries—the dense foliage of the main river not being so great, the sun being able to penetrate the forest growth, while at the same time there are present, from the immense rain fall in these situations, as on the river margins of the main stream, lagoons which never are washed out or dried up entirely—the same conditions would obtain as in the places referred to above, the actual temperature also being raised by the arid and often sandy nature of the soil about these localities.

The island of Marajo, at the mouth of the Amazon River, is about the size of the State of Rhode Island or larger. The northwest, north, and west sides of it are low savanna lands. On the south, southwest, and southeast, the country is densely wooded with tropical growth. Some years ago, a town existed on the north side, but the unhealthfulness of the place was so fatal that it was broken up as a commercial port altogether, while Pará, to the south and west, on the opposite or south side of the river, is free from local fever (excepting occasional epidemics of yellow fever). It may be possible that the northeast trades blowing to the southwest towards Pará, may be purified by having to pass through the dense rampart on the southwest side of Marajo. Pará itself is situated on the south arm of the Amazon, or the Pará river, as it is known locally, and is surrounded by the virgin growth of the tropical forest all about the place. The prevailing winds there are

months, which carry off the decaying material, and the washing out of the surplus stillwater lagoons, must, probably, be noted as among the partial causes of healthfulness. This decaying vegetable matter clogged with mud is deposited in the main stream, where it is hid from the sun's power, and the air preserved innocuous.

However, in speaking of the freedom of the main Amazon from fevers, one must exercise a little reserve now and then, on account of the inability to get at the true condition of things among a native population which probably suffers and dies without our knowing it, in the nooks and corners of the Amazon, where the unsettled nature of the country does not admit of a true estimate of facts being obtained; but for the larger populations in the villages, frequent talks among the oldest residents will elicit approximate truth. During the early part of the present year, for instance, there was quite an outbreak of "fever" among the natives on the low countries near the mouth of the Amazon, some fifty or two hundred miles above Pará, and so grave was it that it attracted the notice of the Pará press, which was petitioning the government to have medical aid sent to relieve the poor creatures; and last year, during the month of September, when the writer of this article passed up the river and happened to be detained at the plantation of a Portuguese, some one hundred and seventy miles above Pará, he was informed by the proprietor that for the last two years there had existed in that section of country, though not immediately in the vicinity of his place, a larger amount of malarial fevers than had ever been known before; and some few cases came under the writer's observation which were decided and severe bilious remittent fevers. At the other places stopped at on the way up to Peru—some eight or ten—nothing was heard of unfavourable to the general reputation which the Amazon enjoys in reference to the subject of malarial disorders.

At the villages on the Marañon and Ucayali the testimony to the freedom from "terciana" is constantly repeated and believed, and also on the Huallaga, as high up as Urinaquas—the highest point for steam navigation—at Borja, on the Marañon, where the sierras begin, it is to be encountered. In the village of Iquitos, the largest on the Marañon, being composed of a population of some 2000 souls, Indians, whites, mestizos, of Spanish, Portuguese, and English blood, in the last year I have not encountered a single case of terciana originating here, and the same testimony is given by the government physician. There have been some cases of reaccession of intermittent fever in those who have come here at varying times from the region of malaria about Borja, high up on the Huallaga, or other tributaries of the Marañon. The past experience of intelligent citizens here seems to confirm this statement.

The villages of the Marañon, of which Iquitos is the largest and most advanced, are situated immediately on the river, above the limit of high water—at Iquitos the rise of the river is about thirty feet at most—and

here the woods are cleared away, merely just far enough to enable one to put up his cane-sided and thatched-roof houses, while the thick-growing vegetation disputes every inch of ground with the colonist. The so-called streets generally, and more especially at the high-water season, enjoy all the dirty appearance of marshy positions, out of which hundreds of frogs make night hideous with their solemn noise, while an occasional small alligator or water-snake looms above the grassy pool. Yet, notwithstanding this, the people sit out in the open air at all times of night to flee from that pest of the Marañon, the mosquito, which will not let them read, write, or hardly live by a candlelight. The little babies and their mothers squat on the ground on mats or in the dirt, and entertain the passer-by, and not an ague after all this.

To this general history of the Marañon fevers, there has this year occurred a notable exception, the first in the memory of the "oldest inhabitant." In June, report reached Iquitos, that an epidemic of a "strange fever" had appeared at a village of some two hundred Indians, called "*Paranari*," located some two hundred miles above Iquitos. The place is located immediately on the river, the elevation above high water just sufficient to avoid flooding, and has a very porous soil, which allows very rapid drying after even hard rains, and immediately surrounded by forest growth, in all respects, as regards that, like Iquitos.

The account I had of the epidemic is that furnished me by a white governor of the place, who brought his mestizo wife here for treatment, ill with the epidemic. The Indians at first judged it to be *terciaria*, but found themselves disappointed in the failure of their native remedies. Becoming, then, panic-stricken, those who were not attacked fled to the woods, and many of the sick died, probably as much from neglect as from the disease. My informant has in the last few weeks received news from there that all the Indians had fled excepting two half-grown boys, one of whom died after the abandonment of the place.

From what I could gather, there must have been a singular severity of symptoms. Great fever, characterized by intermissions in some cases; the appearance of external abscesses in various parts of the body; the expectoration of blood, in some cases profuse; rapid supervening delirium, preceded by violent headache. The wife of the governor I found, on her arrival here, suffering from intermittent febrile symptoms. She had also several abscesses in various parts of the body, and there was a profound debility, a sense of sinking which was very disagreeable, and very marked anemia. In her case the disease began with chills; diarrhoea was also one of her first symptoms, previous to my seeing her, which, I was told, was followed by bloody evacuations, without the other symptoms of dysentery however. I was told that death in the fatal cases supervened in some four or five days generally. Her attack had lasted some three weeks when I saw her. On her first getting better she started down the

river in a canoe; but the exposure caused a reaccession of the fever, which was intermittent, and she remained a few days at a village some one hundred miles above Iquitos, and took passage in the steamer for this latter place, where she has somewhat regained her usual health, after a protracted convalescence which has been interrupted at times by slight febrile manifestations attended with the disagreeable feeling of emptiness and sinking referred to the pit of the stomach, which did not follow any unusual nausea, however. I have not been able to learn anything as regards the mortality in this epidemic. The whole affair has been one altogether without precedent on the Marañon.

In July of this present year there prevailed in Iquitos an epidemic of influenza, of which there were some two hundred cases, none fatal. It lasted some two months, and was the first noticed on the Marañon. The marked beneficial effects of quinia, which seemed in fact the only drug which made any impression on the symptoms, which had a remittency about them in most instances, has induced the opinion of the malarial febrile origin of this demonstration of one of the neuroses. The pain in the temples, especially among the women, sometimes became torture, nervous susceptibility in most tropical complaints being an element more pronounced and more difficult to combat than in our more temperate climes. The disease under notice appeared indifferently among all ages, but more noticed among the women, especially the mestizo class of the community. The epidemic disappeared about the last of August.

In the last few days (October 10) there has appeared here in Iquitos another epidemic form of disease which has been characterized by the following symptoms, mentioned in order of frequency: constipation, frequently most obstinate; abdominal and epigastric pain, the former more frequent, lasting for days, more frequently *preceding* the constipation, coming on at intervals of a few moments, generally most severe, causing the greatest suffering, men sometimes crying from the pain; in some cases, after shifting about for two or three days, the pain would locate itself apparently about the umbilicus, and very little benefited, and in no case permanently, by administration of opiates; *thirst* in nearly all the cases, in some it was extreme, the patient suffering from it; at times the taking of the smallest quantity of water induced eructations almost immediately, and increase of pain; *fever* present in most of the cases, increasing or appearing only at evening, in some there was no distinct febrile manifestation; *urine* high coloured in all the cases; *conjunctiva* yellow, sometimes early in the attack, generally more pronounced as the patient began to *recover* from his pain and thirst; *vomiting* frequent, persistent, not permitting remedies to rest on the stomach, the vomited matters consisting of bilious-looking fluids, and sometimes apparently pure bile; when there was no decided fever in the case, the pulse was perfectly natural; *flatulence* supervened early,



most difficult to relieve and frequently the cause of severe pain, eructations being attended with momentary relief. As the cases became relieved of their acute symptoms, there supervened an icteric condition of the surface, with slight headache. Convalescence has been very tardy, it being difficult to restore the appetite, everything being unpleasant to sight and taste almost.

In the first two or three cases the symptoms which seemed to be neuralgic partly, would have almost led one to believe in the presence of lead poison, so nearly were the features allied for a time, had there been any possible way for such a cause to have been assigned. In the very large majority of cases there were prodromata—anorexia, languor, ill-defined headache, sluggishness of the bowels, and slight discoloration of the conjunctiva.

Among the most common of the painful complaints of the Marañon are severe colics, arising from the ingestion of large quantities of indigestible foods, but which disappear after a few hours under the administration of emetics and calming agents; and at first, some of the symptoms of the present epidemic were somewhat associated with this other feature of the ordinary causes of suffering, but the sequel showed the cases bore no "relation of causation."

Gastralgia, as a symptom of dyspepsia, is very common on the Marañon, especially among the women, some of whom suffer from it for years, the result of any possible imprudence in diet and drink. In the treatment, after the uselessness of opiates had been observed, though there was great toleration noticed, the use of quinia was continued for two or three days regularly as an antiperiodic, in view of the paroxysmal character of the pain, as well as the frequent febrile increase towards evening, and the effects were most happy, the pain itself finding relief, as also the constipation; and also the stomach, which seemed to tolerate that remedy when nothing else would remain. Fomentations to the abdomen were perfectly useless; after the violence of the gastric pain had disappeared, but when there was still a gnawing, disagreeable oppression at the epigastrium, very small blisters to the pit of the stomach were excellent. Clysters were serviceable in the lingering constiveness after the severity of the disease had passed. In convalescence there was, in many cases, noticed a feeling of numbness about the abdomen, a feeling of deadened sensation. Calomel was, after the first few cases, given in conjunction with quinia, to relieve flatulence by stimulating digestion, and by preventing decomposition of whatever food might be taken; it also seemed to contribute to laxative effects; and although, from the materials at first vomited, it would seem that the liver was sufficiently stimulated, it was evident, by experience in these cases, that mercury was most successful in its results. The success which followed this medication with quinia and

calomel is the best argument in their favour, the relief being steady and unexceptional.

It may be stated that tympanites, which appeared after the disease had existed two or three days, was not relieved by any of the usual carminatives given for such purpose. Relief to the abdominal pain was frequently momentarily obtained by bending the body forward, or pressing the hands against the seat of pain. Belladonna and hyoseyamus were now and then given to prevent any griping action of the quinia or calomel. In some of the cases, especially where the patients had previously suffered from attacks of malarial fevers, quinia was the only medicine given in the attack. To restore the apparently paralyzed condition of stomach and bowels, the effect (or, possibly, in some cases, the cause) of the prolonged constipation, or the effect of great dilatation from flatulence, after the patient had "weathered the gale," the combination of strychnia and quinia was found very efficacious; these preparations were also used in conjunction with the various forms of iron. It was found difficult sometimes to rid the patient of the feeling of physical depression referred to the epigastrium, and the appetite was extremely capricious. Convalescence was no doubt much hindered by the very debilitating effects of the moist heat of this climate.

With this somewhat diffuse account of the present epidemic, in which, out of some twenty-five cases, all occurring within twelve days of each other, with the strongest possible similarity of symptoms, there was no fatal one, it may be suggested whether any causal relation links it with the preceding influenza, or the somewhat obscure state of health at Paranari. I have just learned from a young Peruvian who came here from the port of Urimaguas on the Huallaga, that cases, similar to those here now, had occurred there, and at Balsa Puerto, a small village some three days' canoe travel up a small stream to the westward. This young gentleman came here sick with the complaint, and his was a case in which the neuralgic pain about the abdomen was the most severe and protracted, causing him, at times, to beg his medical advisers to give him something to put an end to life, rather than he should suffer; his shrieks from pain were heard in adjoining streets even. One or two cases had occurred here before his arrival. He reported that some of the cases had proved fatal at the points referred to above. There has been no fatal case here, however. In the case of this young man, there was a good deal of agitation; he would sometimes be perfectly quiet while the doctors were preparing medicine at the bedside, and even their presence would act in calming him for a while; a dose of calomel and quinia, seven grains to five, had a remarkable effect the first time it was tried in arresting the pain; the quinia being continued every three hours without any regard to febrile accession. In no case has any headache been annoying. The evacuations for a few days

after the bowels became moved were almost tarry in colour and consistence.<sup>1</sup>

Incidentally it may be mentioned that at Pará, and at one or two points some two hundred miles up the Amazon, there has been prevailing, since June, a sharp epidemic of yellow fever.

Among children, the presence of worms is considered almost universal; and among the grown they are also much more frequently seen than I have elsewhere noticed. The number of these, sometimes, is almost beyond belief, and the wonderful power the little victims have of getting along with such tenants is truly surprising. They are, as far as my observation and experience go, easily gotten rid of by the use of *santonin*, which some parents make one of the usual articles to be kept in the house, to be given twice or three times a month, whether the children complain or not. The plan seems to answer well enough. The want of care in preparation of food, the general negligence of domestic hygiene, the habit of dirt-eating will all sufficiently account for the presence of these parasites. I am disposed to think that in some cases of icterus, or in some of the severe colics, the presence of these animals lodged in the biliary ducts is to be more than suspected. During both of these complaints the discharge of worms by vomiting is not unusual. In a case which occurred here, in the person of an Indian, the rapid supervention of coma and icterus, within six hours after an accession of pain at the epigastrium, led the medical attendant to suspect the entrance of worms into the biliary ducts; unfortunately the superstitious nature of the half-caste and Indian did not allow of the diagnosis being confirmed after death, which took place in twenty-four hours after he was attacked.

*Cold Abscesses* are very frequent, the result of constitutional taints, improper alimentation, and general depressing agencies. They are found mostly among the Indian population, and locate themselves among the muscles of the limbs or in the iliac fossa, where they linger along for months,

<sup>1</sup> The reader will find in Grisolle's *Pathologie Interne*, under the head of *La Colique Végétale*, which is synonymous with *Colique de Madrid, de Poitou, de Cayenne, de Surinam, etc.*, the symptoms detailed as were experienced here. And one of the authors there referred to, M. Fossagrives, suggests whether "cette singulière affection ne se développerait point sous l'influence des miasmes analogues ou identiques avec les miasmes palustres." Grisolle seems to more than question the probability, and thinks that the "colique sèche n'est qu'une colique de plomb." The epidemic, as it appeared here, is so thoroughly freed from any suspicion of such a cause, that I cannot but be convinced of M. Fossagrives's correctness in suggesting malarial febrile causes as producing the symptoms, and that the nervous susceptibilities of the tropics will sufficiently account for any unusual amount of pain or great debility consequent on the attack.

I may mention that I had not read the article in Grisolle until after my remarks in the text were written. Since then other cases have occurred, following the same course, and getting well under the same treatment.

sometimes. When they become mature the amount of pus which is discharged from them is sometimes almost incredible. Those who are subject to these drains on the system frequently become more than usually robust after the discharge ceases. The pus is *not* usually thin. The Indian physique, though generally more than usually good as regards form, rounded outline, symmetry of proportion, is by no means a robust one. Handling the muscles of the limbs conveys to the touch the feeling of flabbiness, as though the bones were cushioned with fat rather than with the sinewy fibre of the red man of our Western fields, or the white man of cooler climes; and this superiority of form, which in the women of pure blood is superior to any I have ever seen in our own land, is no index whatever of strength or activity, and under the exhausting suppuration of these abscesses this physique acquires rather an ungainly appearance.

The usual preparations of iodine do not act as efficiently in these tropical districts in resolving the tumours and threatened abscesses, as may be observed in our own colder latitudes. There seems to be a too deep-seated cachexy in the system for the alterative action of such remedies. It seems best to let nature rid herself of this depressed form of irritation, and the discharge does not injure the health materially, as a general rule. Among the Anglo-Saxon foreigners these collections of pus are not nearly so formidable, either from chronicity or abundance, as in the native or the Latin resident.

*Trismus Nascentium* is to be encountered here with some frequency; but in most cases the little one has died without the medical attendant having seen it, and one hears a vague account from the parent. These convulsive diseases are frequently to be set down to the extreme imprudence of the mother in exposing her offspring unnecessarily—ophthalmia also resulting from this imprudence, though it is astonishing what a profuse suppuration they will bear without having the eye or the sight affected, it being rare to find the cornea or the humours of the eye implicated in these affections. The infant is bathed directly after birth in cold water, and this cold application is kept up as part of the daily regimen. Few or no precautions are taken to keep it off the damp ground, day or night, and the little scamp kicks and rolls about for hours on his damp mother-earth; or, slung behind their mothers' backs in a shawl, they are carried about with them in their visitings at all times of day or night. It is rare for them to "take cold," apparently, and they often thrive, in spite of book-wisdom, until the age when dirt eating begins, or longer, if they should not acquire that vice.

From repeated abortions, accidental, or possibly more frequently induced artificially, it is rare to see more than two children brought up by Indian or mestizo parents, or in the households of the whites who live unmarried with them. These abortions result from want of affection—too little and too great luxury and enlightenment seeming to be equally unfavourable to

the development of maternal love—and from the system of concubinage which prevails so extensively on the Marañon among the whites, Indians, and mestizos, where the uncertainty of possession of partners makes the female dread the probability of her keeper leaving her with a large family on her hands which she does not care to look out for. The frequency of uterine complaints, as a consequence of these unnatural attempts, produces sterility, or continuous bad health among the women; and the population of the Marañon derives little or no increase from a license as regards mistresses, which defeats the only possible object of its toleration—an increase of inhabitants. The very great imprudence of the women at the time of their menstrual flow often results in complaints which tend to chronic bad health and sterility, to which their medication not unfrequently also tends.

The *lymphatic glands* easily become the seat of suppuration, and it is somewhat the rule for the Anglo-Saxon to go through a course of axillary or inguinal induration and suppuration, which appears to be a sort of acclimating process, for a little while after he arrives out. The system recovers itself easily. It is rare to find the Anglo-Saxons having dysentery, nor does their appetite fail them materially—and generally they are the authors of their ills in this climate. The want of variety in diet is, among them, as also among the natives, a constant subject of complaint, and the unalterable scale of dried fish, plantains, and the disagreeable “charapa” (the turtle of the Amazon) is considered as the author of most of the sufferings of the Marañon people.

Among the eruptive fevers, the *smallpox* now and then has made its appearance among the villages on the Marañon, and played sad havoc among the Indian population, who wither under its presence. Some three years since it spread on the margins of the Ucayali River, and last year, when the writer was on this stream’s whole length, it was a rarity to see a hut or village. The Indian, when taken sick, believes that the demon of evil is the malicious spirit of some personal enemy, and if the invalid dies they burn up his huts, bows, and arrows, in fact everything he owns, and move off as far from the supposed bad genius as is possible. During the epidemic among them whole sections of country became entirely deserted; the sick were left to die uncared for, or death was anticipated by throwing the sick in the river, while numbers perished from the frantic wish to rush into the water to relieve the intolerable heat of the body. No system of vaccination has been pursued by the government or the communities where the whites live, and a “happy-go-lucky” theory pre-ides over the destinies of village life on the Marañon. The variola makes its way from the interior towns, such as Moyobamba, Tarpoto, to which the Ucayali and Marañon Indians make their way to trade in fish, wax, sarsaparilla, curiosities, &c.

Some five or six years ago an epidemic of dysentery prevailed here in Iguito; but those who were here then—which was some three years after

its foundation as a government place—have given me no satisfactory account of numbers, or character of the complaint. Epidemic dysentery, some time in the last century, also made its appearance about the country of the *Cerro de la Sal*, near the head of the Ucayali River, and, according to the manuscripts of the old Franciscan friars, it desolated the district for some years.

Such is a brief sketch of what the medical wanderer encounters after a short stay among the native and foreign population of the basin of the Marañon and Ucayali Rivers.

In this retrospect, possibly there will be found some prominent differences between this section and the tropics of the East Indies. The terrible dysenteries, the disastrous fevers, and the extreme derangements of the liver, among the Oriental sojourners, are never encountered here, under 3° south latitude, with a tropical forest embracing thousands of square leagues. The difference may be ascribed, probably, to the fact of a less elevated annual heat, which does not reach above 26° C. ; to a greater uniformity of temperature (the result of a want of violent and prolonged changes from variations of winds of the Amazon basin); the usual gentle northeast breezes, not often being varied by the cold southeast winds, which latter only appear, at most, three days at a time, and that but very rarely. And it has occurred to me that this whole Amazon valley, more especially the Marañon portion of it, in its comparative uniform temperature and humidity, resembles somewhat a marine climate as regards its atmosphere, but without the liability of gales at depressed temperatures, which may in some measure account for its greater healthfulness when compared with other tropical river basins. Whether, in years to come, when these tropical forests are thinned by the immigrant, and the sun breathes all its fire on large cleared districts, with the necessary results of violent and sudden changes of wind and rain, and when the plough or the dredging machine which makes progress, may not also turn up malaria in its delving, "it were curious to consider." Yet, as remarked before, one must,<sup>1</sup> in estimating comparative health, take into consideration the relative number of inhabitants in the Amazon basin; their scattered locations; inaccessibility; paucity of numbers of the white races; and the little really that is known by the traveller in this part of the world of the state of health of the peoples who, hid away here and there in the wooded recesses, die and leave no sign by which to tell of their

<sup>1</sup> It is a well-known fact in tropical South America that the dwellers of the mountains stand the change to a lowland climate much less healthfully than the foreigner of whatever nationality. I have been told by an intelligent Ecuadorian physician, Dr. R. Suarez, formerly of Quito, that the "Serrano"—mountaineer—who goes to the Pacific coast to trade is very liable to die there, and that it is difficult sometimes to persuade them to undertake expeditions either to that lowland country, or to the borders of the river Napo, which is the outlet of Ecuador to the south and east.

diseases or of the numbers who have perished; or of how the survivors pass their existence, whether in suffering, or in robust health.

In looking at tropical populations it will be noticed, especially in tropical America, that, though the Anglo-Saxon enjoys a fair share of health, the Spanish and Portuguese races seem to be the natural man-animal of these countries, appearing even more self-sustaining than the Indian himself, not only by an intellectual development, but by a power of physical resistance to climatal depressions. And, in accounting for this adaptation of the races to the "*tierras calientes*," or lowlands, of the tropics, it appears to me that the following suggestion of an ingenious French medical writer might very well be worthy of attention. After showing that the blood of the southwest peninsula of Europe is the complex resultant of numerous Indo-European branches allied with the primitive Iberian, which probably first came from Chaldea, with the Semitic about Carthage; and with the Moors of Africa, he goes on to say, "Par ses origines, on peut affirmer que le sang Africain a été par trois fois largement infusé dans les veines Espagnoles, et que la température élevée de cette péninsule a dû conserver à ce sang sa facile adaptation aux climats tropicaux. Ne doit-il pas aussi à ces sources Africaines une entente plus cordiale avec le nègre." \* \* \* It is not impossible that the gradual colonizing of the Amazon basin by the Anglo-European or North American will, in time, give rise to a cross with the mestizo or the tropical Latin, which will still further continue to better the future of these inter-tropical jungles. It is true, probably, that rapid migrations cannot be durable or prosperous where the colonists come from a different isothermal zone and retain their blood intact; but crossing with the natives, all things being equal, will favour and accelerate acclimation.

The following is an abstract of a register of weather I have kept in Iquitos, for the months named in 1871. French measurements are those used.

	April.	May.	June.	July.	Aug.	Sept.	Oct
Average of thermometer . . .	26°·2	26°·1	25°·8	24°·9	26°·1	26°·2	26°·7
" " barometer . . .	75·43	75·49	75·57	75·62	75·53	75·48	75·38
" " W. bulb . . .	24·5	24·4	24·0	23·0	23·6	23·8	24·0
Direction of winds . . .	N. E.	N. E.	N. E.	S. & E.	N.	N.W.	N.W.
" " storms . . .	N.	N. E.	N. E.	S. E.	S. E.	S. E.	N. E.
No. of rainy days . . .	17	13	16	11	10	8	14
Highest day aver. of ther. . .	27°·5	27°·9	28°·1	28°·1	28°·3	28°·6	28°·7
Lowest " " " . . .	24·4	24·2	23·3	19·4	20·6	22·2	21·4
Highest record of thermom. . .	29·3	30·2	29·4	29·5	30·4	32·4	31·0
Lowest " " " . . .	23·6	22·7	21·2	18·8	19·6	21·4	23·8
Highest record of barometer . . .	75·72	75·56	75·50	75·99	75·88	75·83	75·66
Lowest " " " . . .	75·12	75·17	75·26	75·32	75·24	75·08	75·03
Highest day aver. of barom. . .	75·59	75·74	75·72	75·61	75·71	75·71	75·61
Lowest " " " . . .	75·31	75·33	75·44	75·43	75·30	75·29	75·20
No. inches rain . . .	...	...	3·13	4·27	3·94	9·33	7·57

ART. VIII.—*Extirpation of the Entire Parotid Gland for the Removal of a Fibroid Tumour in that Region, with Ligation of the External Carotid Artery and Jugular Vein, and Division of Portio Dura Nerve, etc.* By J. H. B. M'CLELLAN, M.D., of Philadelphia.

THE subject of this case was Miss J., thirty-two years of age; a native of Philadelphia; otherwise perfectly healthy, and apparently of a sound constitution. Three years previously, in April, 1868, I had removed a tumour the size of a hen's egg, somewhat lower down the neck, but still projecting over the parotid region. The patient attributed the tumour to a blow received on the side of the neck from the sudden shutting of a door, and which had caused her great pain for a considerable time afterwards. Some six weeks later, a little lump, the size of a pea, was felt, which increased slowly up to the time of the first operation, which was thoroughly performed in the presence of Drs. Wm. Byrd Page and Edward Shippen.

Miss J. enjoyed good health after the first operation until the expiration of two years and a half, when it became apparent that the disease was returning. On careful inquiry, I learned that her parents on both sides had been healthy, and no traces whatever could be discovered of specific disease in her family.

The second tumour grew very rapidly upwards over the cheek and behind the right ear, forcing this organ considerably from its normal position, and extending downwards and backwards towards the sterno-cleido and trapezius muscles, causing much pain from the distension of the parts.

On examining the throat internally, the encroachment of the tumour could be plainly seen by the displacement of the half arch of the palate on the corresponding side, and easily felt by the finger; whilst externally there was considerable distortion of the countenance, and facial expression from the pressure of the tumour on the muscular branch of the fifth pair of nerves. Prior to the operation, the unadvised application of a sorbefacient had very much inflamed the surface of the tumour, and rendered the skin and subjacent parts involved of an unhealthy and engorged appearance.

The operation for removal of this "enormous growth" was performed, October 4th, 1871, in the presence and with the assistance of Prof. Jos. Pancoast, Drs. Wm. Byrd Page, Edward Shippen, and Dr. Geo. M'Clellan. The patient having been made aware of the dangers connected with its removal, and having been fully informed of the risk of a recurrence of the disease in the future, insisted upon its being immediately undertaken. She was thoroughly etherized, and kept in an insensible condition steadily throughout the operation.<sup>1</sup>

The first incision was commenced at the upper and posterior portion of the tumour, beginning with a straight line from the lobe of the ear, and afterwards carried in an elliptical curve around the mass, about five inches in length, to its lower extremity. A corresponding incision was made on the anterior or facial side, beginning and ending at the same points. The tumour was then carefully dissected from its cellular attachments more

<sup>1</sup> Ether was preferred by the operator, as the operation might necessarily be a protracted one.



by the handle of the scalpel than by its cutting edge—making free use of the fingers to tear or separate the mass from its surrounding connections, for fear of hemorrhage before the main supply of arterial blood could be reached; working steadily in this way towards the lower extremity of the wound. The attachments of the digastric muscle, especially its posterior belly, being separated, the external carotid artery was immediately found and secured. The main danger of hemorrhage being thus under control, the body of the tumour was wrenched from its bed by the fingers and hand, and turned upwards and outwards over the face. A stout ligature was then applied around its base, and the upper portion was carefully dissected from the cartilaginous portions of the meatus auditorius, and from the zygoma to which it was closely adherent. But two large vessels were found to require ligation after securing the carotid; but there was considerable superficial bleeding from the recurrent circulation. The deep jugular vein was so much exposed and denuded, that it was deemed expedient to pass a ligature around it; lest the subsequent discharge might produce injury to its coats. The branches of the portio dura nerve ramifying through the parotid gland, were necessarily severed, producing instant paralysis of the lower eyelid, the corner of the mouth, etc. The depth of the wound was shown by its extension far beyond the styloid process, which could be felt and seen denuded of its muscles, and its contiguity to the sides of the pharynx. The wound was left open for a considerable period, to guard against any immediate hemorrhage. All exposed nervous filaments were retrenched, and, after repeated examinations, every suspicious particle was carefully removed. The parts were then closely brought into apposition by means of silken sutures; the ligatures around the vessels being allowed a free opening at the bottom of the wound, so as to admit of unobstructed drainage throughout the healing process. A piece of lint spread with oxide of zinc ointment, and mixed with carbolic acid, was applied over the entire surface, kept in place with a compress by a double roller carefully adjusted around the head; and this was retained for four entire days without removal, and with but very little inconvenience.

The pressure was then removed, and a light, loose dressing of lint, covered with the same ointment, substituted, and changed daily during the free suppuration, which presented a healthy character. The patient experienced no severe shock, and but little pain or trouble in comparison with the magnitude of the operation; complaining at first of difficulty in swallowing, and soreness of the throat—undoubtedly caused by the nearness of the wound to the pharynx—which soon passed away, and she was able to partake of good, nutritious diet, and only complained of the confined position which it was thought best to have her maintain until the coming away of the ligature was completed.

On the fourteenth day after the operation, there was a slight venous hemorrhage, which was easily stopped by pressure, and seemed to be caused by a change of position. An abscess was discovered on the day following, which began to discharge upwards from the bottom of the wound. Its situation seemed to be distinctly confined to the triangular space between the two insertions of the sterno-cleido-mastoid muscle. At first the discharge was tinged with blood, probably owing to contamination from the previous bleeding. An injection of diluted carbolic acid speedily changed its character into clear yellow pus, and, an opening having been made just above the clavicle, at its most dependent part, the discharge was kept away from the original wound. The ligature around the carotid artery came

away on the *seventeenth day*, and the patient was allowed to sit up in bed. On the twenty-sixth day after the operation, a second venous hemorrhage took place, and was of a very alarming quantity. No certain cause could be ascribed for this. And it was, like the first, followed by an abscess, this time extending some distance below the clavicle, without any definite circumscription. This was also punctured at the most dependent point, and the large cavity washed out with carbolic acid diluted. The patient, being very much depressed in spirits by the alarm caused by the large loss of blood, was encouraged to be dressed and walk about the room, as all danger of hemorrhage from the ligated vessels was by this time impossible; she soon rallied in health and spirits. The discharge became perfectly healthy, the wound speedily filled up with granulations, the surface rapidly cicatrized over, and she was soon able to leave the house and take exercise in the open air.

It is now eleven months since the operation was performed, and Miss J. is in as excellent state of health as she has ever enjoyed; the scar being very much diminished and healthy in appearance, showing no indication whatever of any likelihood of a return of the morbid growth which so greatly disfigured her, and so fearfully and speedily threatened destruction of her life.

In a previous case in which I operated, in April, 1845 (*vide Notes to M'Clellan's Surgery*, p. 334, etc.), the very great extent of the tumour necessitated the ligation of the *internal carotid*, as well as the division of the *par vagum*, or *pneumogastric* nerve, and also the *spinal accessory*.

The patient entirely recovered without any bad effects from the division of the *pneumogastric* nerve. This only can be accounted for on the supposition that the pressure of the tumour had *already destroyed the function of the nerve cut*, and that nervous connections, or anastomoses, enabled its symmetrical companion to perform its office.<sup>1</sup>

ART. IX.—*Spinal Contusion with Fracture of Femur, resulting from a fall from aloft; Recovery.* By WM. A. CORWIN, M.D., Assistant Surgeon U.S.N. (Communicated by the Surgeon-General U.S.N.)

HENRY CROWIN, an ordinary seaman, twenty-two years old, fell from the main truck of the flagship *Colorado*, a distance of nearly two hundred feet, on January 25, 1872, while that vessel was lying in the harbour of Hong Kong, China.

He was engaged at the time in "blacking down the main royal black-stay," which procedure necessitated his swinging himself from the stay, a medium sized wire rope, leading down, almost perpendicularly from the truck to the side of the ship, and it was at the moment of his attempt at

<sup>1</sup> *Ude M'Clellan's Surgery*, 1848, edited by Dr. J. H. B. M'Clellan, notes to pp. 331, 332, 333, 334, 335, 336, and 337. Also, first edition of Velpeau's *Operative Surgery*, 1846, pp. 427-8.

swinging from the stay that the accident occurred, the poor fellow sliding down the slender rope with fearful velocity. Breaking, in his descent, one or two small lines, which led from the stay, and which parted like burnt tow under his weight, he struck the hammock netting, and rolled from thence to the deck, some twelve feet below.

Passed Assistant Surgeon Wells, U.S.N. and myself, saw the patient immediately, and found the following injuries; an oblique fracture of the left femur at its middle third with what we afterwards determined to be severe contusion of the spinal cord; in addition to which, the right shoulder was badly bruised and various other bruises and abrasions were found on the arms and legs.

Spinal contusion was diagnosticated from the existence of pain and exquisite tenderness on pressure, over the third lumbar spinous process, co-existing with total loss of motion and nearly complete absence of sensation in both lower extremities, the loss of sensibility being marked in the skin of the perinæum and scrotum. We could obtain no evidence at the time, nor afterwards, of vertebral displacement or fracture. There was, also, complete paralysis of the bladder and rectum. No marks of injury were found about the head, and no evidence of injury to the brain other than slight symptoms of concussion, which passed gradually off leaving no sign. He replied to questions when addressed, but immediately after relapsed into a somnolent state. There was no vomiting, the pupils were normal, as was the respiration, skin cold, pulse full and 100. He was placed in a cot, and anodyne doses morphine sulphat. prescribed.

On the second day, reaction was in full progress; pulse 134 and full; respiration hurried; tongue slightly furred and temperature normal. The mental torpor was now in great degree gone, and instead, he exhibited a slight obtuseness or indifference to what was passing around him, due probably to the opiates taken. No change in the condition of the paralyzed parts. The urine, drawn off by catheter, seemed to be more copiously secreted than in health, and deposited urates in abundance. It was also slightly albuminous; this, however, was a temporary condition only. He drank quantities of water, but could not be persuaded to eat. There had been no evacuation of the bowels since his fall. It was resolved to defer the application of all retentive apparatus as long as prudence would allow. The anodyne was ordered to be discontinued, and small doses of aromatic spirits of ammonia in a dessertspoonful of sherry wine were given three times a day. This, however, had to be discontinued on the third day, as it became apparent that he could not bear stimulus as yet, however moderate. Potass. bromid. in small doses was administered on the third day, with happy effect, as he at once began to improve in his mental state and his pulse and respiration approached healthful conditions.

On the sixth day all medical treatment was omitted. There had been as yet no action of the bowels, though purgatives and stimulating injections had been employed. This constipation gave us no great concern, however, as he had eaten but very little of the lightest food since his illness. The urine had lost its high colour, but was still excessive in quantity (from four to six pints daily). The catheter was constantly used, and the patient did not feel its introduction into bladder. Here I may mention a simple device which I employed, to save the patient the pain and annoyance of being turned upon his side whenever the catheter was used. About three feet of small rubber tubing was obtained and attached to the ivory ring at the open end of an elastic catheter (No. 12.), the ap-

paratus forming a syphon. The instrument being introduced with the tube hanging over the side of the bed into a vessel, the natural elasticity of the walls of the bladder starts the stream, which is then constant until the viscus is emptied, and no disturbance of the patient's position is necessary. This simple arrangement, the materials of which are always easily obtainable, saved our patient much annoyance, ourselves much trouble, and will prove, I hope, of use to the profession generally.

On the eighth day, our patient was moved from the "sick bay" to the gun deck and placed upon a stationary cot made for him, the canvas and mattress of which were pierced with a considerable aperture in case of involuntary stools. Buck's extension apparatus, with lateral splints to the thigh, was then applied to fractured limb, commencing with ten pounds extension. Patient expressed himself as very comfortable. Bowels still constipated, responding but mechanically to injections and seemingly not affected by cathartics. Pulse 112, soft; appetite poor, tongue still coated with a thick brown fur, and patient sleeping poorly. Some congestion appearing about the buttocks, a lotion of alcohol and water, equal parts, was ordered to be sponged over the parts daily. Bladder still relieved by catheter, and urine somewhat diminished in quantity.

On the eleventh day, our patient was cheerful, taking interest and notice of whatever transpired about him. Bowels still constipated, and condition of paralyzed parts unchanged. Alcohol lotions continued to his back, and the following was ordered: *R.* Strychniæ sulphat., gr. ij; aquæ puræ, fʒviij. Solve. Signa, fʒss, ter die.

12th day. Slept very well last night; otherwise no change. Sol. strychniæ sulph. (each dose, gr.  $\frac{1}{4}$ ), was continued, and one pint of ale allowed daily, with continued application of alcohol and water to back.

13th day. Slight conjunctivitis of right eye, indicative of vital depression. Treatment continued.

14th day. Small bed sore on nates, right side. Pulse 96 and soft. No action of bowels yet. Carbulated oil (acid carbolici, crystal, pars i; Olei olivæ, partes xx. *M.*), was ordered as a dressing for bed sore, to be applied on lint and renewed twice daily. Other treatment continued. Croton oil, gtt. ij, was administered in pill form, and extension maintained at ten pounds.

15th day. No response from cathartic. Conjunctivitis severe. Commencing œdema of right leg, for which roller bandage was applied. No distension of abdomen or other evidence of fecal accumulation upon external examination. Ordered a collyrium, plumbic acetate, and to have his treatment continued.

16th day. Slight change for the better. Some return of sensation in right leg; voice seems a little stronger. Bowels still constipated. Pulse 100 and soft. Measurement of the fractured limb to-day showed slight shortening ( $\frac{1}{2}$  inch). The extension was accordingly increased five pounds. Sponging the back and nates with spirits and water, administration of strychniæ sulph., with ale and special diet continued.

17th day. Sensation continues to improve in lower extremities, and patient is commencing to regain motion in the right leg. When told to raise his thigh from the bed, the quadriceps, sartorius, and adductors are seen to contract, irregularly, but he cannot accomplish the desired motion. Bowels still unrelieved. Bladder irritable, requiring to be frequently emptied, and the urine is somewhat offensive, normal in quantity, and high coloured. Bedsores on both nates. That on right side is as large as the

palm of the hand, that on left side, small. Ordered to continue the thorough sponging of the parts around ulcers, the latter to be dressed twice daily with carbolated oil. Other tonic and supporting treatment, with special diet to be continued.

18th day. Losing ground from nearly total want of appetite consequent on extreme constipation of the bowels. Pulse 100, but reduced in volume and strength. Restless and irritable. Tongue coated and conjunctivitis persists. Previous regime continued with special diet. In addition he was ordered, *R. Ol. crotonis tig., gtt. ij; ol. ricini com. f5vj. M. Signa, Statim sumendus.*

19th day. The cathartic administered yesterday operated several times during afternoon and evening. (I have often had occasion to notice the greater *certainly* and *mildness* of action of croton oil when combined with castor oil, producing effects which neither agent could cause alone.) General improvement in symptoms. Extension carefully maintained and treatment continued.

21st day. Progressing fairly. Emaciation great. Appetite improving. Sensation nearly restored in right leg and improving daily in left. Motion also continues to improve slowly. Substituted sherry wine for ale, allowing f5ij ter die. Cod-liver oil, with other treatment local and general continued.

23d day. Conjunctivitis diminishing slowly. Bedsore on right side covered with large blackish slough. Sensation in some parts of lower extremity now nearly normal. Patient states that the passage of catheter along urethra gives him slight pain now. Substituted fresh beef for chicken broth, and ordered general treatment to be continued.

29th day. Very little change since last report. The slough separated last night from larger bed-sore. Both sores are now granulating with profuse discharge, which is very debilitating. The carbolated oil is still applied on lint and a small quantity injected into the cavities of sores every morning. Bowels again torpid. Patient is in excellent spirits. Appetite fair. On measurement, the fractured limb is found to be of equal length with sound leg, and uniting in the most satisfactory manner. From the great emaciation incident to long confinement to bed and exhausting discharges, the provisional callus about fractured bone can easily be felt upon manipulation. Wine, cod-liver oil and sol. strychnie sulph. continued, with same dressing to bedsores. Extension still maintained without lateral splints to thigh.

32d day. Had an attack of dyspnœa last evening about ten o'clock, which, however, yielded to a small dose of chloric ether. Bowels still torpid. Pulse 85 and of good strength. Ordered the sol. strychnie sul. to be discontinued, and substituted ferri et quin. citrat., gr. x, ter die. Instead of sherry wine, to have whiskey, f5ss, ter die, with the cod-liver oil. Special diet continued with dressings to bedsores.

35th day. Improving generally. Bowels were freely moved yesterday, by ol. ricini. General treatment continued.

43d day. Continue to improve slowly. Removed all apparatus from fractured extremity. The thigh had united firmly in a right line, and without the least shortening. General stimulant and nourishing regime still continued. Bedsores closing slowly.

49th day. Bladder regaining tonicity and patient doing well in all respects.

On the 21st of March, the 56th day, our patient convalescing, it was

deemed advisable to send him ashore for the change in air and diet. Quarters were accordingly obtained for him at the Seamen's Hospital, Hong Kong. He had now, in some measure, reacquired power over the bladder, and has since quite dispensed with the catheter. The bedsores were still discharging somewhat, but were nearly closed. Sensation and motion were quite normal in the right lower extremity and much restored in the fractured limb, though much of the weakness remaining in his limb was probably due to the long continued extension. His appetite was excellent, bowels quite normal, and spirits good, and he is now on the highway to perfect recovery.

So wonderful an instance of recuperative power is but rarely chronicled. Buck's apparatus seems to be one of the best for naval surgical practice. It is expeditiously applied, occupies very little space, the necessary cords, pulley, and weight are always obtainable on ship-board, it is not in any way disarranged by the motion of a ship at sea, and, lastly, gives as good results as any other method of treatment.

During the first week of patient's illness a fatal result seemed so certain that it was deemed, in consultation, to be worse than useless to apply any apparatus to the fractured limb, as the disturbance would probably hasten the end and could do the patient no present good. On second thought, however, the injustice of omitting any precautionary measure, that might, in the event of our patient's surviving, forever disable him, was given a due consideration, and the result was, that, with the approval of Medical Inspector H. O. Mayo, U.S.N., and Passed Assistant Surgeon Wells, U. S.N., the extension apparatus was applied.

I need scarcely say that the results of treatment in this case, aided as it was by youth and an excellent constitution, have far exceeded our most sanguine hopes. Our patient's recovery from such terrible injuries certainly verifies the maxim, that "while there is life there is hope."

U. S. FLAG SHIP "COLORADO," HONG KONG, CHINA, March 29, 1872.

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ART. X.—*Cancer of the Stomach with Extension of the Disease posteriorly; marked by a peculiar diagnostic feature rarely met with.*  
By ROBERT P. HARRIS, M.D., of Philadelphia.

THE mobility of the abdominal organs, and in many cases the absence of marked symptoms by which we may determine the character and extent of abnormal growths within the peritoneal cavity, render the diagnosis of abdominal tumours exceedingly difficult, and give value to every feature of a truly pathognomonic character. Strange as it may appear, patients have died of cancer of the stomach, where there had been no symptoms during life to lead the medical attendant to suspect that such a disease

existed: others have had apparently marked symptoms of the malady where it did not exist; and in others it has been readily recognized by the physician at his first visit as in a far advanced stage, when the attention of the patient had only just been called to his case by abdominal pain, nausea, or vomiting. Fortunately for the profession at the present day, the hand and ear have been brought into such valuable use, that their decisions take precedence of the sensations, so often deceptive, as experienced by the patient, and direct to the discovery of the disease where it has been least suspected. All that is requisite in many cases of doubtful character is, to make a thorough manual and aural examination, to decide by negative or positive evidences what is, in all probability, the seat and nature of the disease in question.

In the case I am about to report, the previous health of the patient had for years been such, that there was much more apparent likelihood of death from pulmonary disease, than any other form of affection. He was 58 years of age at the time of his death, and had been subject to attacks of asthma accompanied with catarrhal symptoms, from the age of 14; and for a long time before his last illness, to chronic bronchitis with abundant expectoration; and occasional asthmatic breathing, particularly at night. He was in comfortable circumstances, and not in any business, was never nervous about his health, and had made up his mind that he would never be perfectly well, so far as his cough and attacks of asthma were concerned. In early life he had been a free-liver and used brandy as a stimulant, until his complexion became very florid, and his weight amounted to about two hundred pounds; but, for some years before his last sickness, he drank nothing, except in one or two attacks of sickness, when I gave him of necessity brandy, with marked improvement to his health. He had several attacks of acute bronchitis before his cough became seated, and one, which occurred more than ten years ago, reduced his flesh and strength to such a degree that he became apprehensive of phthisis and sent for me to examine his lungs. This was one of the occasions that I resorted to the use of stimulants, which, with iron and cod-liver oil, restored him to better health than he had enjoyed for a long time, and brought up his weight to about 165 pounds, which remained his average for several years.

I have been somewhat particular in these details, in preparation for the report of his last illness, as his physical condition should be well understood, that we may properly estimate the reasons for his not perceiving the evidences of his failing health until far advanced in disease.

Mr. S. was absent from home during the summer of 1871, and on his return reported himself as in his usual health, having been free from asthma while in the country, but still having his cough, which he said did not trouble him. In vaccinating his arm I became aware that he had lost flesh, but he said he thought he weighed about as usual, and that he had

a famous appetite, which upon close interrogation was very evident. His face was pallid and thin, he had no apparent serious malady of the chest, and did not seem to feel any change in his health. He usually ate three or four eggs for his breakfast, with meat, bread and cakes in proportion; a dinner fit for a strong hale man; and tea of the same character. He made no complaint with regard to his health until November 24th, when he suffered from pains of a neuralgic character in his lower extremities which soon passed off, after which he had asthma, and finally a sense of nausea with dyspeptic symptoms. There were no symptoms of any kind indicative of an affection of the stomach until December 26th, and no vomiting, except for a few days in January, which commenced with an attack of hæmatemesis, and was soon checked. But twenty-five days intervened between the first manifestations of disorder of the digestive organs, and death; and at no time did he vomit solid food, in fact a change from liquid diet to solid food prevented the recurrence of attacks of vomiting which had continued several days previously and did not again return. His first complaint which directed attention to his digestive organs was a want of relish for food; he said, "I can eat enough, but I have no natural feeling of hunger." Nausea after eating was next complained of; then griping pains in the abdomen below the umbilicus; constant eructations of gas; a dragging sensation with increase of abdominal pain in walking, relieved by supporting the abdomen; and finally vomiting.

Palpation and percussion, with auscultation, revealed the presence of a tumour, to the right of and below the usual location of the pyloric orifice of the stomach. This tumour was almost immobile under pressure, and maintained the same relative position whether the patient was examined on his back, sides, or hands and knees, appearing to be attached to the inner face of the spine. It presented the following peculiarities, viz.: When pressed upon steadily, it gave an elastic feel to the fingers over a space of several square inches, attended by a gurgling sensation, followed by a sense of hardness. If the fingers were gradually withdrawn, the gurgling returned with a sense distinctly recognized, as of the passage of fluid and gas through a flattened passage between the hand and tumour. When the ear was applied over the same space, and the hand used in making pressure over the large extremity of the stomach, the passage of fluid and gas could be very distinctly heard at each motion, in compression and relaxation, as if advancing and receding with the hand's action. The sensation to the hand was almost precisely what is experienced in cases of erysipelas, where the areolar tissue of an extremity is infiltrated with foetid pus, emitting, in its discharge, bubbles of gas.

There could be no question here as to the character of the disease presented, and my opinion was fully confirmed by Dr. S. W. Mitchell who examined the patient with me five days before his death. He was then



well enough to sit up, and took a fair allowance of food, but was evidently not nourished by it, and was daily sinking from exhaustion. His pulse rose from 90 to 130 in six days, and although for several days he did not vomit, and had no pain, he rapidly sank and died.

A *post-mortem* examination revealed the cause of the diagnostic feature mentioned, and accounted for several of the peculiarities of the case. There was a cancer seated in the pylorus forming a tumour nearly as large as a fist, but with these unusual characters, viz.: The pyloric orifice was open, and would readily admit the thumb; the disease mainly affected its posterior semi-circumference, the anterior being soft and but slightly thickened; the tumour was composed of the thickened posterior semi-circumference of the right extremity of the organ with an extension backwards, attaching it firmly to the spine, and without involving any of the important neighboring viscera, the duodenum itself even being but slightly thickened. The stomach was very large and full of fluid, which with the gas it contained passed in a wave backward and forward to and from the pyloric orifice over the body of the tumour, and beneath the hand and ear in making the examination as before mentioned. The weight of the stomach, being mainly sustained through the tumour, occasioned the pain in walking, which was relieved by supporting the abdomen with the hands. The patulous state of the pyloric orifice accounts for the ability of the patient to bear a diet of solid food without vomiting it, and for the small amount of emesis in the course of the disease. The stomach of the patient was naturally large, and his appetite for many years of a proportionate character; hence there was little disposition in the organ to contract and expel its contents upwards, as it was comparatively but moderately distended, owing to his diminished appetite.

There were no appearances of cancer in any organ but the stomach; and, although the patient had in former years been a large consumer of alcoholic drinks, his liver was healthy, and of normal size; a microscopic examination of the tumour exhibited the usual characteristics of *scirrhus*.

It is difficult to account for the very rapid exhaustion of Mr. S. after his disease was sufficiently developed to mark its true character, unless it be by supposing that the function of digestion was almost entirely arrested, as he was able to consume an adequate amount of nutriment, until the day prior to his death, to have supported him, if he had been in good health. I have seen patients live with cancer of the stomach until they were emaciated to an extreme degree, could retain no nourishment except for a short time, and were far more advanced in the disease, as shown by the *post-mortem* appearances; as in an instance where the stomach was contracted to the capacity of about two fluidounces, had walls an inch thick, and was the centre of a cancerous mass involving every viscus with which the organ came in contact.

ART. XI.—*Contributions to the Pathological Anatomy of the Nervous System.* By E. C. SEGUIN, M.D., of New York.

I. *Examination of the Cervical Sympathetic Nerve in a Case of Unilateral Sweating of the Head.*—Some attention has of late years been paid to this interesting symptom, and various explanations of its mode of production have been offered.<sup>1</sup> In many cases, mechanical interference (pressure of tumor or aneurism) with the sympathetic nerve is readily made out. In others, the patients' antecedents and the results of treatment warrant the diagnosis of a sympathetic process, one associated with disorder of the stomach or other distant organ. But there are still other cases, in which, the above explanation failing, we are obliged to have recourse to the unmeaning phrase of idiopathic disorder. The instance which I reproduce was of this last kind, and to my knowledge is the only one of its class in which a microscopical examination of the sympathetic chain has been made.

The subject observed by me (a male about 50 years of age) had exhibited one-sided sweating of the face and neck for a considerable number of years; in which period the right half of the face and neck never showed any moisture, not even when the left side was bathed in perspiration. The abnormality, therefore, consisted in the abolition of sweating on one side of the head. When the patient first came under my observation he was in a cachectic state, which ultimately proved to be cancerous, an abdominal tumour soon becoming apparent. On the evening when the patient's wife first informed me of the one-sided sweating, he had been suffering severe abdominal pain, and, in consequence, was perspiring nearly everywhere. The lower and upper limbs and the trunk were moderately moist, the left side of the face (forehead especially) was dripping wet; while immediately beyond the median line the skin of the right side was perfectly dry. The pupils were equal in size and in mobility. A careful estimate of the surface temperature on the temporal region of either side was made by means of Dr. E. Seguin's surface thermometer, but gave no differential result.

On the 7th of May the patient died of exhaustion. The autopsy was made on the 8th, sixteen hours after death, the body having been perfectly preserved in ice. Immense cancerous masses were found in the abdominal cavity, affecting principally the mesenteric glands. Another deposit, in the shape of a rounded tumour as large as a small orange, was met with behind the left clavicle, externally to the sterno-mastoid muscle. Microscopic examination showed the tumour to be composed of carcinomatous tissue.

<sup>1</sup> Consult a good paper on the subject by Roberts Bartholow, M.D., in the *Quarterly Journal of Psychological Medicine*, vol. iii. (1869) pp. 134-144.

The sympathetic chain of the neck was carefully removed on both sides, and very shortly afterward immersed in an artificially iodized serum. During the dissection it was observed that the right nerve was unusually adherent to the sheath of the vessels and pneumogastric nerve, from a point on a level with the bifurcation of the carotid artery nearly up to the superior sympathetic ganglion. The post-clavicular tumour did not involve the left nerve in any way. Examination May 9th, twenty hours after the autopsy. To the naked eye the right chain exhibits no middle ganglion, and presents a marked injection of the nerve just above the superior ganglion, in part corresponding to the adhesions already described. The left chain appears absolutely normal (has three ganglia).

Microscopical examination of a considerable number of preparations from the right superior ganglion, teased in serum, or stained with carmine: no granular or amyloid bodies can be detected, nor any abnormality of the connective tissue; the nerve fibres are normal, and the nerve cells alone depart from the healthy standard. This alteration consists in a marked increase of the granular yellow pigment which normally occupies one-sixth to one-fourth of the body of the ganglion cells. In many cells the pigment is more than equal to one-half the cell bulk; in quite a number it takes up nearly the whole cell body, and almost conceals the nucleus. Preparations from that part of the nerve which should have presented a ganglion contain abundant ganglion cells, nearly all with an abnormal amount of pigment. Only a portion of the inferior ganglion remains; but preparations from that show precisely similar appearances. Similarly prepared specimens from various parts of the nerve trunk exhibit perfectly normal nerve fibres, nearly all myelinic, of very variable diameters. No evidence of proliferation of the connective tissue can be seen. The various vessels met with in the above preparations contain large quantities of blood-globules, but their coats are healthy.

Left nerve—Nearly every part of this chain is examined in the same manner; its nerve fibres, bloodvessels (not injected), connective tissue, and ganglion cells appear in precisely the same state as similar elements of the right chain, *i. e.*, the first three are perfectly normal, the last are very granular.

Consequently, the only lesion found in these nerves is symmetrically developed, and can, consequently, bear no relation to the one-sided arrest of sweating observed during life. In another case it would be highly desirable to examine the cervical portion of the spinal cord as well as the sympathetic itself.

The following measurements are obtained from estimating the size of very numerous elements on both sides. Ganglion cells range from .025 mm. to .062 mm. in diameter; nerve fibres from .001 mm. to .02 mm.

II. *Double Central Canal in part of an otherwise normal Spinal Cord.*—While examining sections from various parts of the spinal cord of a patient who had died of the affection known as general paresis of the insane, I came across unmistakable evidences of the existence of two central canals, most distinct in the cervical enlargement.

(a) In a section made just below the apex of the fourth ventricle, the central canal is single and open, exhibiting very distinct cells. Its long diameter, antero-posterior, equals .53 mm. ; its short diameter .052 mm.

(b) In a section from a point 3 c. below decussation of pyramids, a single central canal, blocked up by distorted epithelial cells, is seen.

(c) Section from the upper part of the cervical enlargement shows two small, beautiful central canals, lined with nearly perfect epithelium. The interval between the two canals equals .03 mm. The posterior median fissure comes down to a point opposite the middle of this interval. The lumen of one canal measures transversely .049 mm. ; antero-posteriorly .018 mm. The transverse diameter of the lumen of the other canal measures .07 mm. ; the antero-posterior .012. The epithelial cells have an average length of about .01 mm. The epithelium is entirely preserved around the left canal, but is a little frayed at the inner angle of the right. Between the canals is a shapeless mass of cellular bodies, such as usually lie about the central canal.

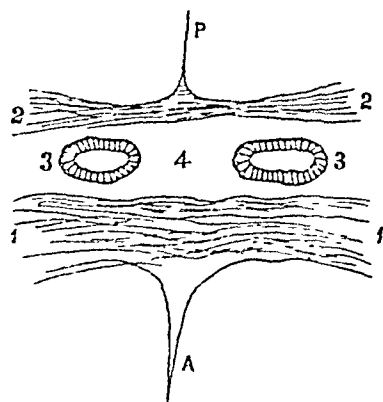


Diagram of Median Part of Transverse Section of Cervical Cord. P. Posterior median fissure. A. Anterior median fissure. 1. Anterior commissure. 2. Posterior commissure. 3. Central canals lined with distinct epithelial cells. 4. Interval filled up with dense cellular structure such as surrounds central canal usually.

(d) A section from the lower part of the cervical enlargement shows traces of two canals, but the epithelium is not in as good condition, and a lumen is distinct only on one side. Intervening and surrounding cellular structure not as dense as in (c).

(e) Section from the mid-dorsal region exhibits a confused mass of cells in the centre of the commissure, with one distinct, irregular aperture, and another very imperfect one at a distance of .08 mm.

(f) In the lumbar enlargement nothing is found but one common cellular (not epithelial) central mass without lumen.

(g) At a point 3 c. above end of cord no distinct epithelium or canal is visible.

ART. XII.—*Two Cases of Chloroform Poisoning.* By SAMUEL C. BUSEY, M.D., Washington, D. C., Physician in charge of the Diseases of Children at the Columbia Dispensary, and one of the Physicians to the Children's Hospital, &c.

CASE I.—On May 28, 1872, I was called to a girl aged 4 years, to whom the mother, through mistake, had given a teaspoonful of chloroform. The child complained of the pungency of the medicine, and of burning in her stomach. On reaching the house, one half hour after, the child was found sitting up, eating a cracker. Her expression was that of a person partially intoxicated; and she staggered in walking, laughed and talked; told me how the medicine burnt her tongue, and hurt her. A teaspoonful of olive oil had been administered, and I gave a draught of warm water. Vomiting soon followed, and the child sank quickly and suddenly into a profound and alarming coma, characterized by excessive pallor of the features, sunken eyes, contracted pupils, insensibility of the cornea, perfect and universal muscular relaxation, complete anæsthesia, coldness of the extremities; an almost imperceptible pulse; short, quick, irregular, and superficial breathing. She was placed in bed, with chest elevated, head thrown back and lower than the body. Artificial heat was applied to the extremities, small quantities of brandy administered from time to time; deglutition was interrupted, slow, and difficult. Respiration was assisted by imitating the natural movements of the chest. Returning consciousness was first manifested by returning sensibility of the cornea, one hour after the setting in of the coma, and in four hours she was entirely restored. Nothing further of interest occurred. No gastric disturbance followed.

The theory of the practice was that the poison must be eliminated, principally through the lungs, and that my duty was to preserve life until sufficient time had elapsed to eliminate the narcotic. With this view I resorted to the arterial stimulant, brandy, to artificial heat, and to mechanical assistance to the respiration.

The sudden setting in of the profound coma, which followed so quickly the administration of the draught of warm water and vomiting occasioned by it, seemed to warrant the inference that the practice was injudicious. Though not quite satisfied whether the fluid poured into the stomach or the act of ejecting it expedited the narcotism, I am inclined to the opinion that warm fluids introduced into the stomach favour the rapid absorption of such volatile substances as chloroform, and hence are contraindicated in such cases.

Subsequent reflection brought me to the conclusion that the application of ice to the spine would prove a valuable adjuvant in the management of such cases. Chapman, in discussing the application and utility of the ice-bag to the spine, says it relieves muscular tension, improves peripheral circulation, and consequently increases surface heat. Hence I was quite prepared to give it a trial in the following case.

CASE II.—On the afternoon of July 25, 1872, I was summoned, in great haste, to Miss G. B., aged 30, white, who had walked from the city four miles into the country. The afternoon was excessively hot and sultry. Upon reaching the house of her friend, at 4 o'clock P.M., in an excited and incoherent manner, she represented that she had taken strychnia, with suicidal intent, and had come there to die. Before concluding the story of her purpose she was seized with a violent convulsion, characterized by great muscular rigidity and opisthotonos. She had four in a brief period. During the intervals the pain was intense, located in the abdomen, but not specially in any region. When I reached the house, one and a half hours after the first convulsion, which, perhaps, occurred soon after swallowing the poison, she was perfectly relaxed, excepting the muscles of the jaw; perfectly insensible, pupils contracted to a point, corneæ insensible to the touch, universal anæsthesia; extreme pallor of the face; cold hands and feet, general surface cool; pulse 78, small, very weak; respiration 16, very superficial, every fifth respiration long drawn and full. A faint odour of chloroform could be detected in her breath, a more decided odour in the matter vomited. An emetic of warm water, salt, and mustard had been administered early during the convulsive period, followed by copious draughts of warm water until emesis ensued, which took place a short time previous to my arrival. The relaxation and insensibility were not fully established until after the vomiting. Two bottles were found in her pocket; one a half-ounce vial marked laudanum, and containing ʒij of laudanum; the other an ounce bottle marked poison, labelled as prescriptions usually are, it being a copy of a prescription of a physician in this city, and containing chloroform ʒiij; tinct. camphor. ʒiij; and tinct. opii ʒiiss. In this bottle a few drops of the mixture remained, and the odour and taste of chloroform and camphor were distinctly recognized. The conclusion was that she had taken half the contents of the bottle of laudanum—ʒij, and a mixture of chloroform and tincture of camphor, the relative quantities being unknown, but as the written directions on the label were, "one teaspoonful every hour," the inference was that there was a third constituent, employed to dilute the others and to obtund their pungency. I concluded the symptoms were due to chloroform. Failing to open the mouth, I could not administer brandy as I desired. Applied cold to the spine, by the constant movement along the entire column from the neck to the sacrum, of ice wrapped in a soft cloth. After some minutes' application of the ice, perhaps fifteen, I succeeded, by first inserting the handle of a strong spoon between the teeth, in opening the mouth, into which I poured some brandy, but little was swallowed. Ice reapplied, and on the second effort I succeeded in getting, perhaps, half an ounce swallowed. The ice applications were several times repeated, and several potations of brandy were given. A half hour after the first application to the spine very slight sensibility was manifested upon touching the corneæ with the end of the finger, and the pulse increased in volume and strength. Reaction gradually took place, and, in two and a half hours after my arrival, perhaps four hours after having taken the poison, she was sitting up in bed, conversing with the attendants. Subsequently to this she suffered from nausea, and became quite nervous, symptoms which were relieved by a full potation of brandy, and she slept quietly and undisturbed through the night. Ate her breakfast, was up during the day, and on the morning of 27th returned to her home in the city.

Her story was that she purchased strychnia from one druggist and laudanum from another, that she took the contents of one bottle and a

portion of the laudanum at one time, just before reaching the house, and that she suffered intense pain in the stomach, a feeling as if on fire, immediately after. The druggist denies that she asked for strychnia, but presented the copied prescription, which he filled, marked it poison, and warned her of the danger of taking more than the prescribed dose. This discrepancy invalidates her testimony, throws a shadow of doubt over all her statements, and casts a suspicion upon the genuineness of the tetanic seizures. If her statements be correct, she took  $\mathfrak{z}$ ivss of laudanum,  $\mathfrak{z}$ ij of chloroform, and  $\mathfrak{z}$ ij of tincture of camphor. I did not attribute any of the symptoms to opium, only suspected that she had taken  $\mathfrak{z}$ ij of laudanum, and feeling quite sure the great portion of this had been ejected from the stomach, I regarded it simply as a case of chloroform poisoning, and so treated it.

The parallel between the symptoms of the two cases was so marked, and the excessive muscular relaxation coming on immediately after the emesis struck me with so much force, that I sought to discover the odour of chloroform, to confirm the opinion already expressed, that she had taken chloroform and not strychnia, notwithstanding the description of the convulsive seizures, by one who had witnessed them, was so forcible and accurate, that, before reaching the house, I was convinced it was a case of strychnia poisoning. The trismus, for a moment, occasioned a doubt, which was only dispelled by the confirmation of my diagnosis, by the distinct recognition of the odour of chloroform by myself and others. I have already intimated a doubt as to the reality of the convulsive seizures, that is, that they were more nearly allied to hysteria than to the action of strychnia.<sup>1</sup> She entered the house under great excitement, talked in an excited manner and incoherently, soon become convulsed and rigid, in the intervals manifesting intense pain. The falsity of her statements in regard to the taking of strychnia, and of her subsequent statement in regard to the purchase of the drug, impress me with the belief that there was no reality in the apparent tetanic seizures; that she had no intention of committing suicide; but that the convulsions, the excited manner, the incoherently told story of her purpose, and the falsity of her statement in regard to the poison purchased and taken, were simply different stages of a pre-arranged scheme to accom-

<sup>1</sup> The case reported by Dr. Dean (*Med. Times and Gazette*, Dec. 1857, p. 615) and referred to by Stillé, p. 108 of his *Therapeutics and Materia Medica*, presented symptoms nearly analogous to this case. The patient, a lady, "took half an ounce of pure chloroform." The symptoms were as follows: "General convulsions, total insensibility, dilated pupils, trismus, a slightly flushed face, a full and rather oppressed pulse, and foaming at the mouth." In this case the patient was seen within five minutes after taking the chloroform. "The stomach was emptied and brandy administered." Another case, referred to by Stillé, took two ounces, was seen twenty minutes afterwards, exhibited the following symptoms: Stupor, contracted pupils, regular respiration, full and soft pulse, 70 in a minute.

plish some sinister purpose, the denouement of which failed through the relaxing and tranquillizing influence of an overdose of chloroform. In this conclusion I am confirmed by some indirect circumstances, not necessary to record, which subsequently came to my knowledge. But the reader will ask, why should there have been trismus? Was I mistaken as to its reality? Several ineffectual efforts to force open the mouth by firm and continuous pressure upon the chin, and to force the handle of a spoon between the teeth, satisfy me that I was not mistaken. The insensibility of the corneæ, tested by frequent application of the end of a finger; the contraction and insensibility of the pupils, neither of which could be feigned; the universal and complete anæsthesia, tested by numerous pricks with a pin; the pallor of the face and coldness of the extremities; the muscular relaxation, and the odour of chloroform in the expired air and fluid vomited, are phenomena which admit of no doubt as to their reality, and when considered altogether, in the light of the preceding case, clearly indicate their nature and cause.

The question naturally suggests itself, would either or both of these patients have died if left to the unaided powers of nature? The child, I think, would; the woman would not have died. Neither the action of the heart nor the respiration was so seriously disturbed as to indicate a fatal termination in the latter case. So far as I know, there has been reported but one death from chloroform narcotism, the details of which the reader can find on page 108, vol. ii., Stillé's *Therapeutics and Materia Medica*, together with a number of cases of chloroform narcotism, which are of interest.

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ART. XIII.—*Vertebrated Prostatic Catheter.* By T. H. SQUIRE, M.D.,  
of Elmira, N. Y.

THE results attending the use of the vertebrated catheter, in about twenty difficult cases of prostatic retention, since the publication of my previous article (see No. of this Journal for October, 1871, p. 393 *et seq.*), have not only confirmed the favourable opinion then expressed, in relation to the value of this new instrument, but they have suggested some minor improvements in its mechanism, and taught a few important lessons in regard to its employment.

It cannot be too forcibly impressed upon the minds of those using the catheter, that *constant watchfulness* is required to prevent an accident whereby a portion of the instrument might be left in the bladder.

In the making of the instrument, all of the cups or vertebræ should be alike, excepting the one that is next to the shaft. This one, instead of having its lip thin and somewhat sharp, should have a thick and obtuse



margin at its mouth, to prevent injury to the mucous membrane of the urethra, while the catheter is being withdrawn. This cup should also be a little longer than its fellows, to the end that it may be easily distinguished from them.

The vertebrated catheter is contraindicated in cases of retention caused by stricture, or by severe laceration of the urethra, and its superior virtues are limited, mainly, to retention of urine produced by enlargement of the prostate gland.

This catheter, vertebrated from the beak to a point about two inches from the pavilion, would probably be a more suitable instrument than any other, to be worn in the urethra, as a means of permanent dilatation in cases of organic stricture. In such a case, a button-like expansion at the outer extremity, and a delicate silver ring to encircle the penis behind the glans, would be required to secure the instrument in place.

It may not be inappropriate here to state that I first publicly called the attention of the profession to this catheter, in an essay upon Catheterism, read before the Elmira Academy of Medicine, in September, 1870, and at this time I exhibited some experimental instruments which had been made under my direction, for the purpose of testing practically the merits of the new idea.

At the New York State Medical Society, in February, 1871, I exhibited the new instrument, and made known the fundamental principles upon which it was constructed.

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ART. XIV.—*Two Cases of Ovariectomy.* By S. T. KNIGHT, M.D., of  
Baltimore, Maryland.

THESE following cases are briefly reported, believing that they may be interesting for statistical purposes.

CASE I. *Ovarian Cyst Removed by Enucleation.*—On the 18th March, 1872, Mrs. G. was placed under my care for an ovarian cyst. Her health was greatly impaired; she was suffering greatly; her age was 52. She commenced menstruating at 17, was married at twenty-two, but had never conceived. She received a blow on the left side about sixteen years ago, and from this dates her trouble.

In December last, her left side commenced enlarging, which enlargement rapidly extended, filling up the whole abdomen. She had never been tapped. I advised ovariectomy, and gave her a candid opinion of the chances of success attending it, which advice she concluded to follow. On Thursday, April 4th, at 12 o'clock, present Drs. McSherry, Chisolm, Kloman, and Louis W. Knight, I proceeded. As she was quite feeble, a good draught of whiskey and water was given her before she was taken from her bed. She was then placed upon a table, made comfortable with pillows, and Dr. McSherry soon brought her under the influence of chloroform. I then made an incision three inches in length through the linea

alba, midway between the umbilicus and symphysis pubis, down to the peritoneum; and upon dividing the parietal layer, a gush of serum escaped. The cyst being then in view, a large, well defined band was discovered, spread over the presenting surface of the cyst; this was first taken for intestine, but by use of some force with the finger, followed up by the heavy curved sound, this band was to a great extent detached from the tumour. Its adhesions, which were very broad and extensive, covered the entire left side of the sac, in a belt several inches wide. As this detachment was made prior to the puncture of the sac, the distension of the cyst acted by direct pressure, and prevented any bleeding. The sac was now punctured, and as it collapsed was drawn out of the opening, and the broad adherent band was still further detached from the left side. At this juncture the large intestine (sigmoid flexure of the colon) came in sight, adhering to this broad ligamentous surface; and, as it was firmly attached to the band, which was being separated from the tumour, it was not disturbed in its relations.

Some large cords, resembling vessels, were now observed running between this broad band and the surface of the cyst, and as they had become loosened during the finger dissection, they were easily torn across.

The sac was now subjected to gentle but steady traction, when finally, much to our surprise, it came away without further attachment (a sac without a pedicle).

Up to the present point of isolation, the patient had not lost three ounces of blood.

As the broad and formerly adherent band was now recognized as the left Fallopian tube, with its broad ligament very ragged with vessels where it had been torn away from the ovarian sac, leaving a broad oozing surface, and being apprehensive that when full reaction came on, free capillary hemorrhage would ensue, I deemed it the safer course to fold this band together and convert it into (what it really was) the pedicle of the tumour, draw it out as far as could be done without undue traction, and clamp it.

The loose end was cut off, and this pedicle, two and a half inches wide, was secured through the wound, which it very nearly filled, and leaving only room enough to pass one suture on either side of it. Everything progressed favourably after the operation, and rapid convalescence was established.

This case is interesting, inasmuch as the pedicle, a very broad one, including as usual the Fallopian tube, adhered to the entire left side and anterior surface of the tumour; covering an area of nearly one square foot of surface.

As this unusual condition had not been recognized in the outset, the very first step taken to separate the supposed adhesion, led to the isolation of the pedicle by tearing it away from the walls of the sac, or, in other words, splitting the walls proper, or getting in between the coats of the tumour.

CASE II. *Ovariectomy Performed During Menstruation.*—V. L., unmarried, age 25; always enjoyed good health, with the exception of pain during her menstrual flow, came under my care November 11th, 1870. She had observed her abdomen to enlarge during a period of three years, but the increase had been slow.

I advised ovariectomy, but could not at that time gain her consent. I therefore tapped her on the 27th, when twenty-three pints of clear fluid were drawn off. Her abdomen rapidly filled again, and on the 24th of August, 1871, ovariectomy was performed.

When about to commence the operation, the patient informed me that her menstrual flow had come on the night previous, and was quite free. Upon consultation, I concluded to proceed. A small abdominal incision was made; the cyst was withdrawn without difficulty. A few parietal and omental adhesions existed, but these were readily broken up, and the pedicle clamped. Recovery went on rapidly, and in five weeks the patient was able to walk about her room. On the return of the first, second, and third menstrual periods, the patient informed me that she had quite an oozing of blood from the cicatrix, but since that time she has not been annoyed in that way, and is now in the enjoyment of good health.

ART. XV.—*Case of Ovariectomy.* By E. A. LEE, M.D.,  
of Duquoin, Illinois.

JUNE 13, 1871, I was requested to see Miss C., aged thirty; rather above medium stature; considerably emaciated; pretty strongly marked nervous temperament. Has not menstruated since an attack of fever one year since; abdomen as large, or larger than most women at full term of pregnancy; most prominent on left side, about two and one-half inches outward and downward from the umbilicus, and at this point measuring thirty-six inches in circumference.

At several points there was decided fluctuation, while, between them, there appears to be a solid or semi-solid mass. The enlargement extended so near to the zyphoid cartilage as to render it difficult to pass the hand between it and the upper part of the tumour; abdominal walls movable over the mass of the tumour. The enlargement was first observed during the attack of fever above referred to, when it was about the size of an orange, occupying the upper part of the left iliac region, was circumscribed, and movable, increasing very little in size until December, since which time it has continued to enlarge, and for the last few months very rapidly. A careful examination warranted the diagnosis of multilocular ovarian cyst, and, from the rapidity of its growth and large size, there appears to be little hope for relief, except from a resort to extirpation.

29th. The bowels having been moved, the urine drawn off, and the necessity of an operation concurred in by all present, the patient was brought fully under the influence of chloroform, when, with the assistance of the following medical gentlemen, my partner, Dr. I. M. Neely, Drs. Hughey, Price, and Sams, of Tamaron, I made an incision three inches long in the line of the linea alba. On reaching the peritoneum, a quart or more of viscid, slightly opaque serum escaped, which exposed the smooth, pinkish-coloured tumour. No adhesions of great magnitude being discovered, a trocar was plunged into the presenting cyst, and three pints of fluid drawn off. Two other cysts were subsequently evacuated. The incision was then increased to eight inches, and three other cysts evacuated with the trocar. Raising the tumour on the left side, pretty extensive bands of adhesion were observed, which, being divided with the écraseur, so released the mass as to permit its being lifted up, revealing a broad membranous pedicle, and an extensive, but not thick, parietal attachment, both containing vessels of considerable size. Securing these with ligatures, the severance

of a tumour, which, with its contents, weighed twenty-four pounds, was now complete. Care was taken during the entire operation to prevent the contents of the cysts and blood from flowing into the abdominal cavity, hence very little sponging was necessary to cleanse the parts. The pedicle was returned, and ligatures brought out at the lower angle of the incision. The external wound was closed with three large and four small silver pins, covered with a compress, and this retained in place with a flannel binder.

The patient passed through the operation without an untoward symptom, and with very little shock—pulse seldom reaching one hundred. Morphia sulphas gr. ss was given before the operation, and continued, so as to procure immunity from pain and secure sleep.

July 1. Patient has done well; wound appears to have healed almost entirely by first intention. Complains to-day of severe abdominal pain; pulse one hundred and thirty-six; enlargement half as great as before operation; abdomen quite tender on pressure. Passed a small catheter beside the ligature, through which flowed an ounce or more of very fetid, bloody pus. Danger of peritonitis appearing imminent, a solution of acid carbolici, in the proportion of 3ss to aqua Oj was injected into the abdominal cavity; it very considerably facilitated the discharge of disorganized blood and pus, and afforded great and instant relief.

2d. Discharge from wound about four ounces, still very fetid; symptoms of peritoneal inflammation subsiding. Injections into wound ordered morning and evening, patient always expressing herself relieved from use of them. Distension of bowels complained of, notwithstanding thorough evacuation by injection. Passed a rectal tube into the rectum, which, permitting the gas to escape, gave immediate relief. The tube was retained almost continually, as its removal was soon followed by reaccumulation of the gas. Up to this time iced milk constituted the only article of diet.

From this time until July 29th there was very little modification of the treatment. The wound was literally washed out by injections twice daily. Discharge gradually diminishing. One of the ligatures came away to-day. Injections ordered once daily, until August 17th, when the other ligature was removed. The healing process from this time was very rapid, resulting in the complete closure of the opening left by ligature.

At date of writing there is a complete restoration to health, and an increase of weight amounting to forty pounds or more. Menstrual function regular in occurrence, and the flow normal in quantity.

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ART. XVI.—*On the Action of Quinia on the Uterus.* By O. H. SEEDS, M.D., of Columbia, Texas.

FOR upwards of twelve years I have had an extensive practice in Columbia, Texas, and in the surrounding country, a region interspersed with bayous, ponds, and lagoons, possessing an extremely rich alluvial soil, luxuriant vegetation, and all the conditions favourable for the production of malaria, and where the prevailing diseases are, consequently, the result

of malarial poisoning. I have very closely observed the action of quinia on the uterus, and feel convinced that in dysmenorrhœa, amenorrhœa, and other diseases of the uterus resulting from a malarial cachexia such as occur in this region, the only effect observed from that medicine is that of a stimulant to the organ, tending to restore its healthy functions. I have not seen a case of abortion that could be ascribed to the action of that remedy.

I could relate many cases to show the safety with which quinia can be given to pregnant women, but shall quote only the following one:—

I was called to an intelligent mulatto girl who appeared to be in a dying condition, as I supposed at first, from the effect of some poison, but a woman present stated that the patient had taken an overdose of quinia. Under appropriate treatment she sufficiently recovered in about twenty-four hours to converse, when she confessed that she was four and a half months advanced in pregnancy, and had taken seventy or eighty grains of quinia to bring on her "sickness," saying that a dose of that article always did so when her menstruation was checked from any other cause. Between four and five months afterwards she was delivered of a fine healthy child.

In conclusion, let me say that in my practice I have given quinia irrespective of pregnancy, whenever the case seemed to me to require it, without any bad result, and I am satisfied that I have prevented abortion, and saved the lives of many mothers and children, by such treatment.

ART. XVII.—*Oxytocic Action of Quinia.* By R. H. RUTLAND, M.D.,  
of Las Animas, Colorado.

For eighteen years I have prescribed quinia in large doses, regardless of the pregnant condition of the patient, and have never seen any unfavorable result. Indeed, in treating a patient suffering from malarial fever and threatened abortion, I should esteem quinia the surest remedy for averting it; not because it possesses any special power to procure uterine quietude, but because it would break up the morbid excitement upon which the uterine activity most probably depended. That quinia has no special oxytocic properties in cases in which it is indicated, I am as well satisfied as of any therapeutic fact.

## REVIEWS.

ART. XVIII.—*A System of Surgery; Pathological, Diagnostic, Therapeutic, and Operative.* By SAMUEL D. GROSS, M.D., LL.D., D.C.L. Oxon., Professor of Surgery in the Jefferson Medical College of Philadelphia, etc. Illustrated by upwards of fourteen hundred engravings. 5th edition, greatly enlarged and thoroughly revised. 2 vols. Imp. 8vo. pp. 2268. H. C. Lea: Philadelphia, 1872.

THOUGH it is only thirteen years since the masterly work of Prof. Gross first appeared, yet four editions have been exhausted, and a fifth is now before us, upon which, it is stated, "upwards of five years of arduous labour have been expended. Every chapter has been thoroughly revised; the text has been augmented by an amount of matter fully equal to four hundred and fifty pages. . . . Many portions have been entirely rewritten, and every effort has been made to condense the language; while an enlargement in the form of the work has prevented any considerable increase in the number of pages."

Of the character and value of Gross' Surgery, nothing need now be said. By common consent it is the most thorough practical treatise in the English language on surgery in general, and the best book of reference for the general practitioner.

This present edition has the same fault (as we believe it to be) that has always characterized the work, viz., that it aims at too much, and is too extensive, both in range of subject and details of each, to ever be really *the* book for undergraduates; on the other hand, it is too limited in the discussion of many topics to be a surgical encyclopædia for well-established practitioners. Yet, notwithstanding all this, no one ever before succeeded so well as Prof. Gross has done, in the attempt to write at once a college text-book and a system of surgery.

We do not propose to review *in extenso* the edition before us, but, with reference to a few subjects only, to see how far, in the rewriting and enlarging, the author has incorporated the results of more than a dozen years' labour of surgeons and pathologists the world over. As in the earlier editions, "Inflammation; its terminations and results" receives a large share of attention. But "inflammation" cannot to-day be written of as it was ten years ago. What says our author respecting its intimate nature? To the "essential elements of the inflammatory process," there has been added, "exudation of blood-liquor, and emigration of white-blood corpuscles." In the 4th edition we find that, "The colourless or pale corpuscles have only been recently discovered, their number is very limited, except in certain forms of disease, where it is much increased. . . . What the precise office of the white corpuscles is has not been determined, but it seems probable that it is connected in some way with the process of nutrition."

In the present edition it is written, that "The colourless, or white cor-

puscles—the leucocytes of certain authors—are much less numerous, but greatly multiply in inflammation; they are round, much larger than the red, and finely granulated on the surface, thus giving them a rough appearance. What their precise office is has not been determined, but it is certain that, at their expense, the red corpuscles can be regenerated; that they wander from the vessels into the surrounding tissues, where they increase by multiplication; and that they play an important part in effecting certain plastic changes, if, indeed, they are not concerned in the regeneration of all the tissues of the body.”

Respecting the part played by the nerves in inflammation, the present edition states that it

“is very imperfectly understood. It is evident, however, that it is very important, although it is impossible to define its character, or specify its degree. In traumatic inflammation, as well as in many cases of idiopathic, the vascular changes, which, as has been seen, consist essentially in dilatation of the vessels, with consequent diminution, retardation, and stasis of the circulation, cannot be referred to the blood itself, but must be seated in the vascular walls. Decrease of the resistance of the vessels to the pressure of the blood is probably due to perverted innervation. The irritated sensory or nutrient nerves of the inflamed part impress the vaso-motor centre in such a way that its action on the walls of the vessels through the vaso-motor nerves is diminished or inhibited, thereby producing lessened tone, or reflex paralysis of their muscular fibres, as evinced by dilatation of the vessels, and consequent congestion of the tissues, to which the irritated sensory nerves are distributed.”

The corresponding statement in the earlier edition is, that

“The part played by the nerves is very imperfectly understood. It is evident, however, that it is very important, although we are unable to define its character, or specify its degree. In traumatic inflammation, as well as in many cases of the idiopathic form of the malady, the primary impression is probably nearly always made upon the nerves, from which it is immediately reflected upon the capillary vessels. . . . The nerves apprise the brain or the cerebro-spinal axis of the attack, and the consequence is, that the heart, acting with unusual vigour, throws an undue quantity of blood into the suffering structures.”

Instead of the ten-line reference to the tissue-changes at the seat of inflammation, found in the 4th edition, we now have two pages devoted to the consideration of the migration of white-corpuscles and the “nutritive disturbances of the cellular elements of the tissues,” it being declared that

“The process of inflammation is attended with local disturbances of circulation and nutrition, the latter being dependent upon the former, which manifest themselves, first, by the escape through the walls of the thinned and dilated veins and capillaries of more blood-liquor than is essential to normal nutritive changes; and, secondly, under the influence of the assimilation of an excess of new material derived from that fluid, by increased activity of the cellular elements of the part, whether they be natural to it, or intruders from the blood-vessels, as shown by their enormous multiplication.

“The accumulation of young cells in the tissues thus gives rise to inflammatory new formations, or plastic infiltration, which cannot be said, on the one hand, to be due exclusively to the emigration and migration of white-blood corpuscles, as advocated by Cohnheim and his followers, or to be derived, on the other hand, exclusively from the connective-tissue corpuscles, as taught by Virchow and his school. On the contrary, both elements participate in the process, as do the epithelia, gland-cells, muscle-corpuscles, nerve-cells, and, in point of fact, all cells found in the tissues or organ affected.”

The outline of Virchow's views, as set forth in the "Cellular Pathology," which heretofore concluded this sub-chapter, has given place to the following :—

"Attempts have been made from time to time to invent theories of inflammation, that should satisfactorily explain its character, the philosophers who have thus occupied themselves imagining that, with the aid of the microscope and other ingenious appliances, they could penetrate the very secrets of nature, by tracing out her most intricate and hidden operations, and the laws by which these operations are governed. How futile all such attempts have been, and are likely to be, the history of the subject amply attests. Theory has succeeded theory, only to be ridiculed, and to work out, so to speak, its own fallacy and insufficiency. The cautious observer contents himself with things as he discerns them, unbiassed by prejudice and conjecture, satisfied if he can occasionally pick up a pebble at the bottom of the great sea of knowledge. Viewed in this light, and measured by this rule, the theories of one man are of no more importance than those of another; as guides to clinical observation, and as aids to practice, they are utterly valueless. It is fortunate for us, in this matter-of-fact age, that we are not obliged, as was the case in former times, in order to establish our claims as philosophers, to speculate about the final causes of things."

Our author is evidently tired of accepting theories that must needs be discarded as soon as adopted.

The treatment of inflammation remains essentially as before, Prof. Gross still holding his well-known views of the value of bloodletting, mercury, and the antiphlogistic treatment generally. But he has in the present edition added the following sentence :—

"In speaking, as I shall have frequent occasion to do in the following pages, of the 'antiphlogistic' treatment, I shall employ this expression, sanctioned by long usage, altogether in a conventional sense, and not in that of the older pathologists. An antiphlogistic remedy may, in the modern acceptation of the term, and in the sense in which I shall use it, be mild or harsh, gentle or heroic, soothing or perturbing, according to the exigencies of each particular case of inflammation, injury, or disease. To treat all patients similarly, or on one uniform plan, would be contrary alike to the dictates of common sense, the requirements of science, and the experience of the profession."

In the sub-chapter on "Suppuration," there are to be noticed a number of changes. As indicative of the author's readiness to correct wrong opinions previously entertained, we find that he has omitted the following sentence: "No surgeon likes to tie a large vein, well knowing that the operation may be followed by fatal suppuration of its lining membrane" (4th ed. vol. i. p. 126), and has stated elsewhere (5th ed. vol. i. p. 824) that "in only one instance [referring to Dr. S. W. Gross's statistics of vein ligations], was there any evidence of pyæmia; in none of diffused phlebitis. . . . It will thus be seen that the danger of ligating veins is in great degree if not entirely unfounded."

The most important changes, though, are, as might be expected, with reference to the nature and origin of pus, which, instead of being merely altered fibrin (4th ed. vol. i. p. 129), he now states

"is due to the disturbances of circulation and nutrition of the affected structures, through which the activity of local protoplasmic masses is increased, as evinced by their enormous multiplication. It has been demonstrated by Virchow that, under the influence of the assimilation of an excess of blood-liquor which has escaped from the dilated vessels at the focus of the inflammation, the connective-tissue corpuscles proliferate and assume the characters of pus globules. This theory of the formation of pus, however, is too exclusive, and



has been placed in doubt by the discovery of Cohnheim, who has shown by a series of well-contrived experiments that pus is in a great degree the product of the colourless blood corpuscles which have wandered out of the vessels into the tissues. The results of these experiments have been confirmed by the researches of Koster, Vulpian, and other observers, and they carry the mind back to the days of Gendrin, who, in 1824, in his great work on the Anatomical History of Inflammation, enunciated almost precisely similar views, based upon his own investigations. It has, moreover, been demonstrated that other cell elements enter into the formation of pus, as, for example, those of the cornea, muscles, glands, mucous and serous membranes, which by their germination aid in the process. These points . . . clearly point to the fact that pus is fluid inflammatory new formation, due to the accumulation of young cells, which are derived partly from the blood, and partly from the cell elements normal to the tissue or organ affected."

Again, instead of the declaration that "pus is never absorbed" (4th ed. vol. i. p. 130), it is now said, that,

"in regard to the absorption of pus, it is highly probable that the more fluid elements enter the system readily, and without any previous change; and, indeed, recent observation has shown that even the pus corpuscles may do this, although it is reasonable to suppose that, as a general rule, the absorbent vessels will not admit them unless they have been more or less disintegrated and broken down."

The chapter on "Tumours" has been to a very large extent rewritten. The classification has been changed so as to more nearly correspond to that based upon anatomical character now generally adopted, and an entire new section on "Sarcoma" has been introduced in place of the remarks in the previous editions on the "fibro-plastic," "recurrent fibroid," and "myeloid" tumours. It would, perhaps, have been better if the chapter had been altogether rewritten, for in that case we should probably not have found, as we now do, that certain varieties of tumours are described under more than one head; *e. g.*, gelatinous polyps under myxomatous and polypoid tumours, fibrous polyps under fibrous and polypoid tumours, fibrous tumours of the uterus under fibrous and myxomatous tumours. The new section on "Sarcoma" is a decided addition to the chapter. In what tumours of this class differ from "carcinomas" is thus expressed:—

"After extirpation they almost certainly return, retaining the peculiarities of the original tumour, in or near the cicatrice, and this local recurrence is constantly repeated. In the latter [carcinomas], on the other hand, continuous recurrence is the rule, and they usually assume the encephaloid type. Sarcomas evince little disposition to open; they rarely give rise to a true cachexia; are almost painless before ulceration sets in; and the neighbouring lymphatic glands are singularly free from implication. These distinctive features are reversed in carcinoma. To the naked eye, the only differential characteristics, so far as we are aware, are that the former are frequently encapsulated, fat is never seen in their interior, and they do not contain a juice like that of carcinoma, which can be expressed from an alveolar structure. The anatomical distinctions are not less marked, the relation borne by the cell to the intercellular substance being decisive of the nature of the mass. In carcinoma, alveoli are formed between the trabeculae of a fibrous stroma, which are crowded by cells of an epithelial type. In sarcomas, on the other hand, the cells are arranged as parenchymatous cells, forming component parts of a continuous tissue; and the structure is never, in the true sense of the term, alveolar, in such a way that the cell elements, which always preserve the type of connective-tissue cells, are grouped in the particular meshes of a stroma."

As a summing up, our author says:—

"In a word, a very rapidly growing, large, painless, apparently fluctuating

tumour, occurring before the fortieth year, not marked by lymphatic involvement, disposition to ulcerate, or impairment of the general health, may be pronounced to be sarcomatous. In the treatment of these tumours nothing need to be expected from general measures, the only remedy that holds out the slightest prospect for a cure being early and complete excision, with, perhaps, destructive cauterization of the surrounding parts. For the very large soft sarcomas which originate deep in the extremities, whether from the interstitial muscular tissue, lymphatic glands, aponeuroses, sheaths of vessels and nerves, periosteum or bone, amputation, if possible, in the contiguity of the limb, is the proper resource, while resection may be practised when the shorter bones, such as the phalanges of the fingers, clavicle, radius, and ulna, are affected. When the jaws are the seat of the disease, total extirpation is preferable to partial excision."

As respects the contraindications to surgical interference in cases of carcinoma, we find the following one in addition to what were presented in the earlier editions:—

"I was formerly greatly opposed, in carcinomatous affections, to operative interference merely as a palliative measure, believing that the pain and risk consequent upon its employment, would not (?) counterbalance the beneficial effects. After more mature experience, however, I came to a different conclusion, and for years past I have, in numerous instances, used the knife where there was not the slightest prospect of a permanent cure. The class of cases to which this procedure is more especially adapted are those in which there are excessive pain, loss of appetite and sleep, and great discharge of foul, offensive matter, contaminating the air of the patient's apartment, and rapidly undermining the vital powers. With the aid of chloroform, an operation is no longer a source of suffering, and may, in such a condition, if properly performed, be followed by much good, not only freeing the patient from local and constitutional distress, but perhaps materially prolonging life by getting rid of a burden which has weighed down both mind and body. Moreover the recurring disease is not always as bad as the original, although such an event can seldom be foretold with any degree of certainty."

The chapter on "Syphilis" remains much as heretofore, and will, we think, be found to be one of the least, if not *the* least, satisfactory in the book. Professor Gross is, as he always has been, an out-and-out unicist, and many of his views are not at all in accordance with those of the great majority of syphilographers of the present day. The soft chancre, he says,

"often affects the system, giving rise to secondary and tertiary symptoms; attacks of this kind, however, are much less common than in the indurated variety, though the effects are frequently not less deplorable. . . . The non-indurated chancre, if multiple or of great extent, will, other things being equal, be more likely to give rise to constitutional involvement than a single sore, especially if superficial and of small size. . . . It is well known, that, in some individuals, soft chancres produce hard chancres, and hard chancres soft, although, as a general rule, like creates like. Another fact of no little interest as it regards the unicuity of the syphilitic virus is, that both hard and soft chancres not unfrequently follow inoculation with the matter of mucous tubercles."

Now this is all true or all not so, and if true, and our author is right, the major part of the teachings of the present time is incorrect, and the teachers radically in error. Again, as respects the bubo; the multiple, indolent, indurated glandular enlargements are, it is said, "to be dreaded on account of the disposition of the specific poison to lurk in the substance of the affected glands, from which, in time, there is great danger of its being conveyed into the system, so as to give rise ultimately to secondary

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and tertiary symptoms. The bubo, in fact, is a hot-bed; not only for the temporary lodgement of virus, but for its zymotic operation, and its gradual extension to other and more important structures." How many syphilographers to-day will assent to these statements, and see, in specifically indurated lymphatic chains, "hot-beds for the zymotic operation" of deposited syphilitic virus? Such characteristic adenopathy is accepted generally as an indication of and consequence of a constitutional infection. It seems to us, as we have elsewhere stated, that there are certain facts that will not square with any theory as yet presented, and, as Fournier has said, "the absolute diagnosis of chancre cannot and should not be established except on these two bases; the chancre on the one hand; and, on the other, the ulterior evolution, that is to say, the constitutional affections which after a short interval succeed the chancre;" yet, for all this, we cannot but believe that the highest American authority on surgery is teaching a doctrine that will confuse practitioners and injure patients. The practitioner will be confused by the diametrically opposed statements of his recognized authorities; and patients will be injured by the mental disturbance that must come from the believed liability to constitutional manifestations, and perhaps, too, by the treatment instituted, if a mercurial course is to be adopted when the ulcer is "followed by a suppurating bubo."

We are glad to see that, as in previous editions, recognition is made of the possible communication of syphilis in vaccination. and that this possibility is dwelt upon more strongly than before. From almost every civilized country, proof has been received that vaccination is a means by which syphilis can be communicated, and this fact should be the more persistently brought to the notice of the profession because of the disposition that has been of late years manifested in certain quarters to ignore or deny the possibility of such transmission.

Chapter XI. on "Railway Injuries," is a new chapter, and upon a subject the importance of which is yearly being more recognized, especially with reference to the remote effects. These latter

"manifest themselves in various degrees as well as in various forms; sometimes in one manner, and sometimes in another, from the slightest departure from the normal condition of an organ to the complete perversion of its functions. The exciting cause is more commonly a slight than a severe one, the patient, after having suffered from shock, having, perhaps, made a rapid recovery, or so nearly regained his mental and physical vigour as to be able in a short time to resume his accustomed occupation as if nothing had happened. By and by, however, generally after the lapse of several months, without any assignable cause, his general health gives way, or he gradually loses his control over some particular organ. The approaches denotive of these occurrences are usually very stealthy and insidious, and hence, long before the patient is made fully sensible of their import, the most serious pathological changes may take place at the seat of the original lesion."

"A mild course of mercury" is declared to be indicated when these secondary effects ensue, and "slight pyalism steadily maintained for several consecutive weeks is sometimes required." Will we never have a settlement of this vexed question of the therapeutic place and value of mercury?

There is possibly yet another class of "railway injuries," not referred to in the chapter before us, viz., nervous lesions from the long-continued jarring to which train-employés and steady travellers are subjected.

In Chapter XIII. a section on "Thermometry" has been introduced, but reference is only made to the use of the thermometer in cases of *exaltation*

of temperature. As M. Redard has shown, the accurate determination of decrease of bodily heat is of great assistance in the establishment of diagnosis and prognosis in cases of severe wounds and injuries, such as gunshot fractures, burns, and penetrating wounds of the cavities, particularly the abdominal. In section 7, on the "Microscope," the previously given description of the instrument is omitted.

In Chapter XIV. sections on "hypodermic medication," the "surgical applications of electricity," and "antiseptics," have been added. Passing over the remarks on faradization and galvanic cauterization, we find that, according to our author,

"The best results from electrolysis have been obtained in vascular, sebaceous, and goitrous tumours, particularly the cystic variety; in chronic glandular tumour; in hydatid tumours of the liver; in hydrocele, and in stricture of the urethra. In the treatment of aneurism it has almost been abandoned; but it has proved successful in two cases of the cirroid form of the disease that have been subjected to it. Nævoid, venous, and small sebaceous tumours rarely resist the influence of the galvanic current, while the testimony of Dr. Althaus and Dr. Mackenzie is strongly in favour of it in the management of goitre. . . . Electrolysis has also been employed in carcinomatous tumours, but a more extended experience is necessary to decide its applicability to these affections."

Of *antiseptics* and the *antiseptic dressing* no very exalted opinion seems to be held.

"Although the researches of Pasteur and other observers have established the existence of myriads of low forms of organisms, especially fungoid spores, in our breathing atmosphere, the demonstration of living disease-producing germs is wanting. Hence physicians, myself included, have been somewhat chary in accepting the germ theory of the decomposition of animal matter. . . . My experience, moreover, in private practice, has convinced me that abscesses may be opened, that wounds, as those made in the removal of tumours, may close, and that compound fractures may unite, as readily without as under the use of antiseptic agents. . . . When the wound is very large, as after the amputation of a limb, or the extirpation of the mammary gland, . . . I have never found any appreciable benefit from the use of carbolic acid. . . . Whether carbolic acid, apart from the other means recommended by Prof. Lister, is really of any benefit in the treatment of these injuries, is still a mooted question. . . . The advantage of the animal ligature is that, besides approaching more nearly to the living tissues than any other material, the ends may be cut off close to the knot; its disadvantage, that it soon becomes softened and disintegrated from the imbibition of fluids, thereby rendering it liable to separate before it has accomplished the object for which it was applied. This reason ought to be quite sufficient to induce its rejection; for no conscientious surgeon should ever subject his patient to such a contingency, especially when he has always at hand so reliable a substance as silk. This objection is sustained by the recent reports of two cases in which the carbolic catgut ligature slipped off the carotid and femoral arteries."

We hardly think our author has done full justice to the germ theory and the antiseptic dressing. Is it so certain that "demonstration of living disease-producing germs is wanting?" May they not be right who, like MM. Coze and Feltz, contend that "every infectious element is in its nature bacteriform," and farther that the bacteria that they show are the living germs producing the disease under which the individuals from whom they were taken were labouring at the time? Again, that wounds will unite as readily without as under the use of antiseptic agents, many of the best surgeons in the world do not believe; insisting, as they do, that thorough and faithful antiseptic dressing will produce most satisfactory

results in a percentage of cases much higher than that afforded by any other method. Again, the properly prepared carbolized catgut ligature is not liable to the objection raised against it; but, in the words of Mr. Lister, "a knot tied upon it holds more securely than one on waxed silk. Water, whether cold or at a temperature of  $100^{\circ}$  F., has little effect upon the thread, and even putrid serum of the blood acting upon it for days at the temperature of the body, does not make the knots relax their hold." It is declared by those who ought to be familiar with the facts, that the failure in Mr. Spence's case was due directly to the use of an improperly prepared ligature.

In the chapter on "Anæsthetics," we find the historical notice almost as in the first edition, and much more full than in the fourth; and Dr. Horace Wells' name and labours are again duly recognized. Why they were not so in the fourth, as in the earlier editions, we cannot understand. As respects the use of chloroform it is said: "It is to be regretted, that an agent capable of conferring such vast benefit should be so little employed in this country, because a fatal instance, produced for the most part by maladministration, is occasionally reported, as if death in surgical operations never arose from any other cause." It is true, however, that many surgeons are growing more and more afraid of it, for either the mortality resulting from its use is frightfully increasing, or else the fatal results are being more honestly acknowledged. In the present edition we find notice of the properties, effects, and methods of using the bichloride of methylene and nitrous oxide, neither of which were treated of in the preceding edition.

The chapters on "Diseases and Injuries of Arteries, Veins, and Capillaries," particularly the first, have been considerably enlarged, and a few changes made that deserve notice. Acupressure and torsion are more fully described, and more favourably spoken of than before; mention is made of various substitutes for the ligature and acupressure; considerable space is devoted to the points at which compression of the various arteries should be made; forced flexion is treated of. To the causes of secondary hemorrhage, previously given, has been added "organic lesion of liver, heart, and other viscera." Direct compression of the denuded artery is mentioned at some length, the author declaring that he is favourably impressed with it; acupuncturing is pronounced unworthy of repetition; the operation of opening the sac has been too seldom performed for the author to express a "final verdict in regard to its value." Varicose aneurisms of various trunks are mentioned, as also aneurism of the "deep femoral." A section has been added on ligation of the "common femoral." Decided preference is expressed for Guthrie's "direct method" of arriving at the "posterior tibial." The statistical tables have been much enlarged, and full use made of the more recent compilations. As respects the propriety of ligating veins, we have already noticed the change of opinion which has taken place since the fourth edition was published.

Upon the subject of the retentive dressing in cases of fracture, we find that the previously expressed preference for the starch bandage is no longer held, but

"Of all the articles used in the preparation of the immovable apparatus, I give a decided preference to the silicate of soda, as it not only possesses every quality requisite for such a contrivance, but the great additional advantage of rapid desiccation and facility of application and removal. The plaster of Paris dressing is chiefly applicable to fractures of the lower extremity, where it answers

a most excellent purpose; while the paraffin bandage, from its impermeability to fluids, is peculiarly adapted to injuries of this kind attended with discharge. The starch bandage is always troublesome, dries slowly, even with the aid of artificial heat, and unless the greatest possible care be taken, is liable to premature derangement, necessitating occasional renewal, at a time, perhaps, when interference might be prejudicial to the reparative process. The glue dressing has not been extensively enough employed to enable us to form a correct estimate of its value."

The chapter on "Diseases of the Joints" remains nearly as before; an additional section on Concussion of the Joints has been added.

Dislocations of the hip have, since the first edition appeared, been the subject of much study and investigation, and the literature of the profession has been increased by, among other contributions, the elegant monograph of Prof. Bigelow. His views with reference to the influence of the ilio-femoral ligament are duly noticed, but we infer, from what is written, that Prof. Gross does not fully accept them, being rather inclined to believe, with Profs. Gunn and Moore, that it is the untorn portion of the capsule, wherever it may be, that causes the difficulty in reduction. That the ilio-femoral ligament does act as Prof. Bigelow claims, and that it is certainly a cause if not the cause of difficulty in reduction by direct extension, we have repeatedly verified by experiment upon the cadaver.

In the section on "Psoas Abscess" we find it stated, as in the previous editions, that the abscess generally points "just above Poupart's ligament." The great majority of writers, as we found upon investigation a few months since, declare that the pointing occurs *below* the ligament.

The chapter on "Diseases and Injuries of the Eye" has been considerably enlarged, and as we notice in the preface, the revision was made by Dr. William Thomson, of Wills Hospital. Valuable additions have also been made to the chapter on "Diseases and Injuries of the Ear."

Respecting extirpation of the thyroid gland we find a somewhat less positive and sweeping condemnation of it than before, and full notice is taken of the successful operations that have been reported during the last five years. The results of electrolysis are also referred to.

In the section on "Affections of the Parotid Gland," Chapter XIII., we find an entire revision of the paragraph on the tumours of this region, as, indeed, might have been expected after noticing the changes that have been made in the chapter on tumours in general. Respecting the age at which these parotid tumours appear, it is declared that they "are generally met with between the thirtieth and fortieth years; encephaloid, myxoma, and enchondroma being usually observed before the twentieth year; while fibromas and sarcomas are almost peculiar to young adults. Scirrhus and epithelioma are essentially affections of advanced life."

In the chapter on "Hernia," due notice is taken of the method of relieving strangulation, and effecting reduction by "withdrawal of the gas and serum from the rupture by means of a delicate trocar." Numerous cases have of late been reported of success attending the use of Dieulafoy's aspirator.

The tabular statement of the "general results of the different methods of lithotomy," shows an increase in numbers over that previously given, of 3411 cases, the addition of which raises the mortality from 1 in 8 $\frac{1}{2}$  to 1 in 7 $\frac{1}{4}$ .

Respecting the opinion of Barwell and others, that "tenotomy as a remedy for club-foot is entirely unnecessary," the edition under review contains the following, not found in the earlier editions.

"As an exclusive practice, it [the treatment by apparatus simply] cannot, I think, be too pointedly condemned. While in some instances it answers the purpose admirably, it is certain that, in the great majority of cases, tenotomy constitutes a most important preliminary step to a rapid and successful cure. My reasons for this statement are twofold. In the first place, tenotomy, when carefully performed, is a perfectly harmless operation; and in the second, the treatment pursued by Barwell, Sayre, and others, requires an amount of skill and attention which few practitioners can command."

Chapter XXI., "Special Excisions of Bones and Joints," remains much as before, the most noticeable changes being in the opinion expressed respecting the value of excision of portions of the bones of the forearm for gunshot injury (which are now stated to have been practised *with* very encouraging results, instead of with *no* very encouraging results as before), and in the statistical tables, which have been brought up to date, use having been duly made, among others, of Ashhurst's statistics of hip-joint excisions, and S. W. Gross' and Otis', of excisions for gun-shot injury.

In the concluding Chapter, on "Special Amputations," the principal changes are in the history and statistics of the several operations, which have been made much more full and complete, and in the description of the various new methods of amputating which have been brought to the notice of the profession during the last few years.

In the revision and rewriting, very many verbal alterations have been made, and sentences recast, to the decided improvement of the book; though there is still some room for change for the better, since, *e.g.*, it is as before directed, that "the bowels should be maintained in a soluble condition," and scirrhus is still said to be "often named hard cancer, an expression which was applied to it in the infancy of the science, from some fancied resemblance it was supposed to bear to the claws of that animal." There are still to be noticed some ponderous words of Latin origin, for which, we think, simpler Saxon might advantageously have been substituted, and there frequently occur such translations of technical terms as *bursa*, *fistule*, *straight muscle*, *two-headed flexor muscle*, *small pectoral muscle*, *blood-liquor*, *Polish plait*, etc., which we doubt if even Prof. Gross' authority and influence, backed by that of the few others who write in a similar way, can make acceptable to the majority of cultivated physicians. But, while such blemishes are to be regretted, we remember that it has for ages been a recognized fact that "sometimes e'en good Homer nods."

The present edition of Gross' Surgery is more elegant, more complete, more valuable than the editions previously issued, and the work more surely than before is a monument *ære perennius* to the industry and learning of our great surgical authority.

P. S. C.

ART. XIX.—*A Treatise on Diseases of the Bones.* By THOMAS M. MARKOE, M.D., Professor of Surgery in the College of Physicians and Surgeons, Surgeon to the New York Hospital, etc. New York: D. Appleton & Co., 1872. 8vo., pp. viii., 416.

THIS book, the author announces in his preface, contains the substance of lectures which he has delivered during the past twelve years. "It does not claim to be a complete compendium of all that is known on the sub-

jects of which it treats," the author having, in its composition, followed chiefly the leadings of his individual studies and observations, though he has endeavoured, he tells us, to make up the deficiencies of his own knowledge, by the free use of the materials scattered so richly through periodical literature, "which scattered leaves" he deems it "the right and duty of the systematic writer to collect and to embody in any account he may offer of the state of our science at any given period."

We were at first disposed to regret that the author had not tried to make his book "a complete compendium of all that is known on the subjects of which it treats," but, after a careful reading of the whole volume, are inclined to take an opposite view, and to wish that he had confined himself still more strictly to his own observations; for, *whereas the original part of the book is, though brief, really very good, the bulk of the volume, or, as it might be called, the "scattered-leaves" portion, is by no means deserving of the same commendation.* Not only is the author's pathology, at times, somewhat antiquated, but his pages are disfigured by numerous errors and omissions, while his style of composition is not so uniformly careful but that it often offends the ear, and occasionally provokes a smile. At the same time, as we have already indicated, the book contains a number of exceedingly interesting clinical histories, and many remarks and reflections which show the author to be a practical surgeon of much skill, and of very good judgment.

In the brief review which we now purpose making of Prof. Markoe's volume, we shall endeavour to point out, with strict impartiality, both what we regard as its merits, and what appear to us to be its faults.

The whole work is divided into an introduction and three parts, which are respectively devoted to Diseases of Bone, Tumours of Bone, and Malignant Diseases of Bone. The introduction does not, so far as we can see, introduce anything, and might, therefore, we think, have been properly omitted.

Chapter I., of Part I., treats of Hypertrophy and Atrophy of Bone. Here we find at once an illustration of what we have said of the good features of the book, and of its defects. An interesting case is recorded, in which, for acute necrosis of the tibia, almost the whole shaft of the bone was removed; there was very little reproduction of osseous tissue, and, when the patient died after two years, the tibia of the diseased side was found to be "replaced in its middle portion by a mere fibrous cord, with some nodules of bone continuous with the sound bone above and below, but not fused together in the middle," the supporting power of the tibia being thus completely abrogated; the fibula had, however "undergone hypertrophy, most marked opposite the deficiency in the tibia, and so considerable, that, on comparing it with its fellow of the opposite side," it was found to be "at least three times its superior in thickness and strength." As Dr. Markoe justly remarks, "a more perfect illustration of simple compensatory hypertrophy" could hardly be found. Following closely after this interesting observation, which is illustrated by means of an excellent wood-cut, we find a reference to the so-called "ivory exostosis" of the face, which is spoken of as "another form of hypertrophy of bone;" but neither here, nor in the chapter devoted to osseous tumours, do we find any mention of the doctrine advocated by Dolbeau and others, that these ivory-like growths originate, in some instances at least, in the mucous membrane of the nasal fossæ and other cavities of the face, under which circumstances they would of course have no claim to be considered



as instances of bony hypertrophy; yet here is a "scattered leaf," which, it seems to us, Dr. Markoe would have done well to preserve.

In speaking of atrophy from disuse, the author gives a judicious caution as to the amount of force to be employed in attempting the reduction of old dislocations, and narrates two cases, one occurring in his own practice, and one in that of a colleague, in which, by a very moderate amount of force, fracture was under these circumstances produced.

Chapter II. is devoted to the consideration of "Inflammation of Bone." Dr. Markoe seems to differ from the majority of writers, in that he regards inflammation of the bone proper as a precedent change to inflammation of the periosteum or medulla; at least this is the impression which we derive from his not very clear account of osteitis. We observe that he speaks of the pouring out and subsequent organization of plastic exudations, just as he might have done before the days of Virchow and Cohnheim. Under the head of *treatment*, we find a recommendation of "local bloodletting, blisters, and the careful use of mercury," followed by "issues and derivatives," but no mention of the deep groove cut with a Hey's saw (as advised by Mr. Erichsen), which our experience has led us to consider more efficient, in cases of osteitis, than all the leeches, blisters, or mercurials that can be employed.

Chapter III. treats of Suppuration in Bone, and especially of the circumscribed form of suppuration, or abscess of bone. A sufficiently good account, illustrated by several clinical histories, is given of this affection, but the author falls into the not unusual mistake of attributing to Sir Benjamin Brodie the discovery of the proper and now universally accepted mode of treating these cases: "Mr. Brodie," says Dr. Markoe, "was the first to call attention to these abscesses and their treatment." This erroneous statement is the more inexcusable, because one of the latest "scattered leaves" which issued from the pen of that distinguished writer and able surgeon, the late Dr. George C. Blackman, was devoted to an historical inquiry into this very subject.<sup>1</sup> In the paper referred to, Dr. Blackman showed very conclusively, that the pathology of the cases described by Brodie, that of certain cases described by Hey, of Leeds, and that of the cases which Dr. Markoe has himself described under the name of "Chronic Sinuous Abscess of Bone" (and to which he devotes his next chapter), were the same, and that the use of the trephine in these cases had been resorted to long before the days of the eminent medical baronet. We were much interested in Dr. Blackman's paper when it appeared in the pages of this Journal, and took a good deal of trouble in looking up the references given, and in further pursuing the inquiry, and were thus enabled to trace the history of the operation to even an earlier period than had been done by Dr. B. As the subject is worthy of some little attention, we will digress for a few moments from our consideration of Dr. Markoe's volume, to lay before our readers the fruit of our researches upon this point.

Who was actually the first to trephine a long bone for chronic abscess, we are unable to say, but the operation was certainly done by the illustrious J. L. Petit,<sup>2</sup> in the early part of the last century, on the tibia of a young American, whose symptoms had persisted for three years, and who was about to be submitted, on suspicion, to a course of antisyphilitic treat-

<sup>1</sup> See number of this Journal for October, 1869, p. 378.

<sup>2</sup> *Traité des Maladies Chirurgicales*, tom. ii. p. 12. Paris, 1790.

ment, when the great French surgeon fortunately came to the rescue. Petit's doctrines are referred to by Monro,<sup>1</sup> in the Essay on Caries, quoted by Dr. Blackman. The next operation of the kind, of which we have any knowledge, was done by an American surgeon, Mr. Walker,<sup>2</sup> of Virginia, on a negro: the medullary cavity of the humerus was laid open by the trephine and gouge, and the contained pus and some exfoliations removed, the patient making a good recovery.

The use of the trephine in cases of abscess in bone was, we believe, first formally taught as the proper mode of treatment by David,<sup>3</sup> in his essay which received the prize of the French Royal Academy of Surgery, in 1764. David was followed by Bromfield<sup>4</sup> in 1773; by Hey,<sup>5</sup> of Leeds, in 1786; by Nathan Smith<sup>6</sup> (in a case of diffused suppuration) in 1798; and by Simons,<sup>7</sup> of South Carolina, in 1825. Brodie's<sup>8</sup> first operation was not performed until 1828.

Returning from this digression, we come to Dr. Markoe's fourth chapter, on Chronic Sinuous Abscess of Bone, which, except for some omissions and a few verbal alterations, is a mere reprint of the author's well-known paper in the *New York Journal of Medicine* for May, 1858. We see nothing in Dr. Markoe's account of this affection, as regards either its pathology or its treatment, to entitle it to be separated from those forms of abscess occurring in bone, which have long been familiar to the profession from the writings of Hey, Brodie, and others.

Chapter V. is devoted to the subject of Diffused Suppuration, or (as Dr. Markoe uses the term) Osteo-myelitis. We have elsewhere referred to and deplored the confusion which prevails among surgeons, as to the proper signification to be attached to the word osteo-myelitis, and much regret that Dr. Markoe has not followed Lidell and other recent writers in giving it the comprehensive meaning to which it is etymologically entitled. The author indeed gives Dr. Lidell's definition of the disease—inflammation of the marrow of the bone—and quotes his description of its three stages, that of carnification, that of suppuration, and that of mortification; but immediately afterwards speaks of a "more healthy form of simple inflammation of the medulla," met with in civil practice, and, as it seems to us, makes confusion worse confounded by using the word "osteo-myelitis," as an equivalent for the "non-limited, diffuse, or infiltrated suppuration" which is met with in the most acute cases. Indeed this whole chapter seems to us very unsatisfactory, and far inferior in every respect to Dr. Lidell's excellent chapter on the same subject.

There is one point on which a word must be said, and that is, with regard to Dr. Markoe's condemnation of the teaching of Prof. Longmore, whose views Dr. M. declares to be "unsound, and founded on an erroneous pathology." As is well known, disarticulation has been recommended by Vallette, Roux, Fayrer, and other surgeons, as the proper mode of treatment in cases of suppurative osteo-myelitis affecting the bones of the ex-

<sup>1</sup> Medical Essays and Observations, published by a society in Edinburgh, vol. v. p. 291. Edinburgh, 1752.

<sup>2</sup> Medical Transactions, published by the College of Physicians in London, vol. iii. p. 25. London, 1785.

<sup>3</sup> Prix de l'Acad. Royale de Chirurgie, tom iv. p. 167. Paris, 1819.

<sup>4</sup> Chirurgical Cases and Observations, vol ii. p. 24. London, 1773.

<sup>5</sup> Practical Observations in Surgery, p. 22. Philadelphia, 1805.

<sup>6</sup> Medical and Surgical Memoirs, p. 109. Baltimore, 1831.

<sup>7</sup> Medical Recorder, vol. ix. p. 385. Philadelphia, 1825.

<sup>8</sup> Works, vol. ii. p. 315. London, 1865.

tremities, and particularly when osteo-myelitis attacks the bone of a stump after previous amputation in continuity. Mr. Longmore has, on the other hand, contended that, in many cases, conservative measures, the extraction of sequestra, etc., may be sufficient. But, says Dr. Markoe, "the tubular sequestra of which he speaks, and which he regards as always the result of osteo-myelitis, have in fact no connection whatever, in most cases, with this formidable disease," and "the conclusions of Drs. Vallette and Roux are not invalidated by the reasonings of Mr. Longmore." Dr. Markoe's peculiar theory as to the formation of the tubular sequestra in question, will be referred to in another place; but justice to Mr. Longmore compels us to say here, that some of the conditions for which Roux recommends disarticulation, are precisely similar to those described by the British surgeon—even including the tubular sequestra—and that hence Dr. Markoe's criticism seems to us to be based upon a misappreciation of the facts of the case. Certainly Dr. M. cannot have read very carefully the following paragraph, which we extract in the form of a free translation from Roux's memoir:—

"In peculiarly good organizations, this third period [of osteo-myelitis] is not inevitably fatal, since, in the most exceptional cases, a cure may still be obtained by disarticulation. It is in these difficult circumstances that the interior of the bone, detached as a tube, tends to escape outwardly, and that the bone, reduced to its exterior compact layer, becomes covered with solid and irregular deposits, and becomes enormously hypertrophied, producing at intervals on its surface abscesses which are swift to recall the phlegmonous state of the stump [a previous amputation in continuity is supposed], the symptoms and dangers of purulent infection."

We may add that the plate which is given to illustrate this description represents as veritable a tubular sequestrum as any figured by Mr. Longmore.

Dr. Markoe's sixth chapter is devoted to the subject of Rickets, which we are surprised to hear him declare is a disease rarely seen in this country. Upon this chapter we have to remark merely that we think it might have been made better had the author rendered himself familiar with the views of a larger number of writers: Sir Wm. Jenner is a very high authority, but is by no means the only modern authority on the subject of rickets.

Chapter VII. contains a short account of the affection known as *Mollities Ossium*, *Osteo-malacia*, or *Malacoosteon*. If we do not misunderstand Dr. Markoe, he represents Sir James Paget as regarding osteo-malacia as in all cases "essentially a fatty degeneration;" but a reference to Sir James's sixth lecture shows that he distinctly recognizes two varieties of the disease—one, which he believes to be the more common in England, and in which there is fatty degeneration; and another, more common in Germany and France, which he calls "the simpler softening of the bone, or osteo-malacia, in which the bones are flexible rather than brittle, and appear reduced to their cartilaginous state." This chapter terminates with a "sketch of the famous case of Madame Sapiot," dear to every medical student from the time-honored illustration, which with wonderfully contorted limbs figures in so many surgical text-books.

Chapter VIII. treats of "*Fragilitas Ossium*," by which term the author appears to mean a disposition, sometimes hereditary, to the occurrence of fracture, without any recognizable disease of the bone or any constit-

tional disorder. We doubt the wisdom of attempting to give this vague predisposition a definite place in the nosology of bone lesions, and still more the wisdom of applying to it a name which is generally recognized as referring to an entirely distinct condition.

Chapter IX. treats of Tubercular Disease of Bone, a subject which the author justly remarks is acknowledged by all to be "debatable land." This being the case, it seems to us that he would have done wisely either not to commit himself in the matter at all, or to commit himself on the side which is advocated by the best modern authorities; instead of doing this, however, he adopts the old phraseology of "gray granulation," and "crude yellow tubercle," though there is every reason to believe that in at least the majority of instances the so-called "yellow tubercle" of bone is no tubercle at all. Apart from this, the chapter gives a very fair account of the progress of tuberculous disease in bone, the question of treatment being reserved until after the consideration of Caries, which is the subject of Chapter X.

"Without attempting," says Dr. Markoe, "to define caries, I will content myself with describing it as a disease of the cancellous structure of bone, characterized by a chronic or subacute inflammation, terminating in suppuration, which is partly infiltrated, and partly collected into abscesses, the cavities of which abscesses, after they have discharged their contents, have a tendency to ulceration, whereby sometimes extensive destruction of bone-tissue results."

This very indefinite description (which is so indefinite that we do not wonder that the author hesitates to call it a definition) seems to us in every respect less satisfactory than the ordinary statement which represents caries as simply ulceration of bone; and the fact which seems to be a stumbling block to Dr. Markoe, that suppuration accompanies caries, need not stand in the way, when it is remembered that suppuration likewise accompanies the analogous process—ulceration—of the soft tissues. We cannot agree with the author that the distinction which he makes between primary or idiopathic, and secondary or symptomatic caries, is either useful or justified by any essential diversity in the courses pursued by the two varieties of the affection: the process is the same in both instances, and when the disease is once established its symptoms are the same, whether it is a primary or a secondary condition.

Dr. Markoe's account of the pathological anatomy of caries is chiefly taken from Barwell, and is upon the whole satisfactory; a curious slip is, however, made upon page 98, in saying that "reddish serum" is "converted into pus;" mingled with pus, is probably what is meant. In the treatment of caries, Dr. Markoe places great reliance upon the administration of mercury, both as a cathartic and as an alterative; he also speaks more favourably than most modern writers of the use of setons, issues, and the actual cautery. While acknowledging the importance of rest to the affected part in the early stages of caries, Dr. M. fears that atrophy and degeneration may result from too prolonged disuse, and hence recommends the employment of passive motion when active inflammatory symptoms have subsided. He adds a valuable practical hint, which he says he learned from Dr. A. H. Stevens, that, if the pain and tenderness produced by passive motion last more than twenty-four hours, too much has been done; but that, if the pain caused by the surgeon's manipulations has entirely passed away within that period, he may be encouraged to proceed.

In speaking of the operation of excision, Dr. Markoe refers to White, of Manchester, as having been "the first who by a defined and purposed

procedure, undertook the removal of carious bone, he having removed the head of the humerus for caries in the year 1768." This sentence embraces two distinct errors; in the first place, White did not remove the head of the humerus, but left it in the glenoid cavity, taking away merely a sequestrum from the shaft of the bone;<sup>1</sup> and, in the second place, White's operation, such as it was, was preceded by Filkin's excision of the knee, in 1762.

Chapter XI., which terminates the first part of the work, occupies nearly a fourth of the whole volume, and is devoted to the important subject of Necrosis. This affection has evidently been a favourite subject of study with the author, and he gives a very good account of the various predisposing and exciting causes to which the death of bone may be due. "It is popularly believed," says Dr. Markoe, "that fevers do frequently produce necrosis, and hence one popular name of the disease, viz. fever-sore." Whether this is or is not a correct account of the origin of the term "fever-sore," we are not prepared to say, but we note that it differs from the account given by the late Dr. Nathan Smith,<sup>2</sup> writing more than forty years ago, when the term fever-sore was probably more commonly used than at present: "this disease," according to Dr. Smith, "was formerly known in New England under the name of *fever-sore*, given to it undoubtedly because it is generally accompanied, from the very commencement, with a high degree of constitutional irritation and symptomatic fever."

In speaking of the form of necrosis of the jaws met with among workers in phosphorus, Dr. Markoe avows himself unable to explain why the Schneiderian and bronchial mucous membranes, and the bony structures in contact with those structures, do not suffer equally with the buccal mucous membrane and the jaws; but in view of the acknowledged fact, on which he himself lays stress, that the "phosphorus disease" is only manifested in those who have carious teeth or ulcerated gums, or who have recently had teeth extracted, it seems to us that an explanation may be readily found in the great frequency with which carious teeth and ulcerated gums are met with, and in the comparative rarity with which ulceration occurs in the Schneiderian and bronchial mucous membranes.

We have been particularly interested in Dr. Markoe's remarks upon the subject of *hemorrhage* occurring as a complication of necrosis, and quote the following paragraphs, which convey a surgical lesson of the highest practical importance:—

"I have examined carefully, during the last twenty years, thirteen cases of necrosis in which hemorrhage occurred of sufficient severity to require surgical interference. In every one of these it was the main artery of the region which was the source of the hemorrhage, except in one case, and then it was the vertebral which had been eroded by a fragment of dead bone, from a pistol-wound, which was in a favourable state of healing when the fatal hemorrhage occurred. In each case the coats of the artery were eroded evidently by the direct contact of a sharp edge of the sequestrum, with one exception, and then though the main artery was opened, and a sharp sequestrum was quite near, we could not pronounce positively that the hole observed in the side of the artery was actually due to the pressure of the sharp edge of bone. The number of observations is too small to decide the point that small vessels never bleed from the cause we are studying; but the testimony of these few is so nearly uniform that I think it may safely be accepted as a pathological law, and I am quite sure it

<sup>1</sup> Hodges, *The Excisions of Joints*, p. 22. Boston, 1861. And Holmes's *System of Surgery*, vol. v. p. 667. London, 1871.

<sup>2</sup> *Op. cit.*, p. 97.

affords our soundest practical indication. Precisely what that indication is, must be settled by the features presented by each case; but it is hardly necessary to say that the remedy does not consist in the mere removal of the cause of the mischief, that is the sharp edge of the dead bone. When that is removed, there remains the opened artery to be cared for, and, if my position is correct, that this opened artery is a main trunk, very little hope can be entertained that nature will be able to close the wounded vessel without assistance from art.

"Two courses present themselves to the surgeon in this serious emergency: The first is, to make an attempt to reach and tie the wounded vessel; and the second is, to amputate, if the ligature cannot safely or successfully be undertaken. The point of urgent importance, however, is, in my judgment, not to delay till a sudden gush of blood places your patient beyond the hope of benefit from any operation, be it ever so clearly indicated, or ever so skilfully performed."

After considering the subject of necrosis in general, Dr. Markoe takes up in succession several varieties of the affection, as follows: "1. Superficial necrosis or exfoliation. 2. In heads of bones near joints. 3. In cranial bones. 4. In jaw-bones. 5. After fractures. 6. After amputations. 7. Without suppuration. 8. Without exfoliation." Dr. Markoe seems to us to undervalue the seton (p. 156) as a means of hastening the separation of deep-seated sequestra: in the form of the oakum seton or tarred rope, as recommended by Dr. Sayre, we have frequently employed it under these circumstances with very satisfactory results.

We turn with interest to the section on *Necrosis after Amputations*, for it is here that the author explains his theory of the occurrence of the tubular sequestra, which have been already referred to. The symptoms which attend the formation of these sequestra are well described, and clear directions given for their extraction by operative measures. Referring to the inner cylinder of living bone which is occasionally found within the sequestrum, the author expresses his belief that it "has not been noticed by any who have written on this subject." This we hardly need say is a mistake. The occurrence of ossification of the medulla within a sequestrum, has been distinctly recognized by Ollier and other authors, and illustrative cases have been published by several writers, among whom we may particularly mention Dr. J. H. Packard and Dr. Wm. Pepper,<sup>1</sup> of this city. With regard to the origin of these tubular sequestra, Dr. Markoe advances a theory (which we believe is peculiar to himself), that the death of the bone is due to the division of its nutrient artery, either by the knife or saw, the inner layer of compact tissue (which is supplied through the medulla) perishing in consequence, though the medulla itself maintains its vitality by means of its connection with the upper and more vascular part of the bone, while the outer layer of compact tissue is sustained by the periosteum. But this theory (which is purely hypothetical), though sufficiently ingenious in its application to cases of thigh-amputation, does not, we submit, explain the occurrence of tubular sequestra either in cases of amputation of the upper arm or leg,<sup>2</sup> or in cases (such as Dr. Pepper's,

<sup>1</sup> See numbers of this Journal for July, 1868, and April, 1870.

<sup>2</sup> In the case of the *femur*, as pointed out by Dr. Markoe, the nutrient artery passes *upwards*, and its division in an amputation would, in some appreciable degree, cut off the blood-supply of the upper part of the bone; but in the cases of the *humerus* and *tibia*, the nutrient arteries pass *downwards*, and amputations which would cause their division would likewise remove those parts of the respective bones which might be expected to perish in consequence. Moreover, in the case of the *humerus*, the nutrient artery is given off directly from the brachial, and, if Dr.

already referred to) in which no amputation at all has been performed. On the other hand the ordinary explanation, which attributes the formation of these sequestra to the existence of a subacute or chronic form of osteitis, accompanied, as that always is, by inflammation of both periosteum and medulla, seems to us perfectly reasonable and satisfactory. The symptoms which accompany the formation of tubular sequestra are indeed, as Dr. Markoe justly remarks, not those of acute suppurative osteo-myelitis, but they are, we maintain, just such as are met with in cases of the milder and more chronic forms of bone-inflammation, to which we have referred.

We observe, with some surprise, that Dr. Markoe seems still to believe in the existence of a distinct endosteum or medullary membrane.

In the section on *Necrosis without Suppuration*, we find no reference to Sir James Paget's recently published observations on this subject, nor to the analogy pointed out by the same author and by the late Mr. Teale, between these cases and those of loose cartilage in the knee-joint.

Dr. Markoe's remarks on the *treatment* of necrosis are practical, and generally judicious: he makes no mention, however, of what we regard as two excellent remedies, viz.: (1) cutting a groove with a Hey's saw in the bone threatened with necrosis, when simple incision of the periosteum proves insufficient, and (2) introducing a tarred rope or oakum seton as a means of hastening the separation of deep-seated sequestra.

We find no reference in any part of this chapter to that peculiar variety of necrosis which we have elsewhere ventured to designate (in contradistinction to the ordinary form of the disease) as *moist necrosis*, and which Dr. Lidell has so admirably described under the name of *mephitic gangrene of bone*.

This review has already occupied so much space that we must content ourselves with very brief comments upon the second and third parts of Dr. Markoe's volume. The account given of non-malignant tumours of bone is, upon the whole, tolerably satisfactory, the pathology and description of the microscopic appearances being chiefly compiled from the writings of Paget and Billroth, while interspersed are numerous interesting clinical histories derived from the practice of the author and his colleagues. Dr. Markoe suggests another name, in addition to the many already in use, to designate the group of tumours which are variously known as the fibroplastic, recurrent fibroid, spindle-celled sarcomata, etc., and proposes that these growths should be called "spindle-celled fibroids." We think the definition of myeloid tumour would be improved by the use of the qualifying term "fœtal;" for, though the "*myéloplares*" are met with in adult marrow (particularly when inflamed), they are especially characteristic of the medulla of fœtal life. In speaking of excision of the upper jaw, Dr. Markoe refers to Jameson's famous operation in 1820, as being "recognized as the first:" this is a mistake, for, whereas the first *complete* excision of the jaw (Jameson's was a partial operation) was done by Gensoul in 1827, *partial* excisions had been frequently performed at an earlier date, the history of the operation indeed dating back to the time of Aculthus in the 17th century.

Perhaps the most interesting and really valuable part of Dr. Markoe's volume is the concluding portion, which treats of malignant diseases of bone. Here he seems to have relied more than elsewhere upon his own

Markoe's theory were correct, ligation of the brachial in its upper part ought to cause internal necrosis of the humerus—a result which, it is scarcely necessary to say, does not occur.

resources, and he has certainly produced a valuable practical contribution to the literature of his subject. At the same time there is here apparent the same lack of information, as to what others have accomplished in the same field, which has been noticed in the previous portions of the work; as an illustration we need only mention that, in the pages devoted to epithelioma or epithelial cancer affecting the front of the leg and tibia, the names of Marjolin, of Cæsar Hawkins, and of Collis, do not once occur. Still this part of the book, and particularly the very judicious remarks on treatment, with which it concludes, have upon the whole impressed us more favourably than any of the earlier portions of the volume.

There yet remains for us to justify one criticism which we have ventured to make, and this is as to the peculiarities of Dr. Markoe's style. As illustrations, which might be multiplied almost indefinitely, we select the following: "It is not easy to say why the disease should differ in its behaviour in these bones from the course it pursues elsewhere" (page 157); how can a *disease* be said to differ from the *course* which it pursues?—"a case, recently amputated at Bellevue Hospital, commenced in a finger" (page 220); how can a *case* be amputated, and how can it commence in a finger?—"Large quantities of blood issuing rapidly from a case of necrosis" (page 132); a sentence which might refer to epistaxis or bleeding piles, as well as to the form of hemorrhage intended—and, finally, "The tumours shown in Figs. 99 and 100 were both young men, one eighteen, the other nineteen years old" (page 349). Though the book is handsomely printed (and rather uncommonly well illustrated) it contains some curious specimens of proof-reading; thus, in the short space of three lines, on page 280, we find Sir Wm. Lawrence called Mr. Laurence; Mr. Mitchell Henry, Mr. Mitchill Henry; Mr. Cooper Forster, Mr. Cooper Foster; Mr. Cock, Dr. Cock; and Dr. Wilks, Dr. Wilkes. Again (pp. 195, 196), we are told that a patient had his thigh amputated in May, 1855, and was discharged cured, in May, 1868, though from the history of the case it would appear that the whole course of treatment occupied but a single year.

If in the preceding pages we have seemed to dwell more upon the faults of Dr. Markoe's book than upon its good points, it is not because we are insensible of the latter. Though as a "Treatise on Diseases of the Bones," the work must, we think, be regarded as a failure, it has undoubtedly considerable value as an interesting record of individual surgical experience; and as such we heartily recommend it to the attention of our readers.

J. A., JR.

ART. XX.—*Lehrbuch der Geburtshülfe mit Einschluss der Pathologie der Schwangerschaft und des Wochenbettes*, von Dr. KARL SCHROEDER, ordentl. öffentl. Professor der Geburtshülfe und Director der Entbindungskunst an der Universität Erlangen. Mit 26 in den Text gedruckten Holzschnitten. Dritte, neu durchgearbeitete Auflage. Svo. pp. xiv., 698. Bonn: Max Cohen & Sohn, 1872.

*Manual of Obstetrics*. By Dr. KARL SCHROEDER. Third revised edition. Bonn: Max Cohen & Son, 1872.

For some time past the need of a treatise on obstetrics, embodying the recent advances in physiology and pathology, has been felt to be a press-



ing want in Germany. It has been evident that, in spite of the zealous efforts of Gresser, in Dresden, to maintain the reputation of Naegele's text-book, which has so long held the first place as an almost classical work, the time had come when such an attempt could not but result in failure, the old framework being strangely out of harmony with the new additions. Many authors have endeavoured to supply this want, but the text-books of Scanzoni, Hohl, Braun, Lange, and others have not recognized the fact that a thorough revision of the work was necessary, and have consistently repeated time-honored theories and hereditary errors; their efforts being mainly directed to the perfection of the mechanical portion of obstetrics, viz., improvements in instruments, modifications of operative procedures, etc., and to the therapeutical treatment of the various complications of labour and child-bed.

Not long since an attempt was made at Innsbruck to unite the younger talent, and, by a division of labour, to bring prominently forward, in a condensed form, the results of special researches in the physiology and pathology of gestation and parturition. The co-operative method of authorship has become popular in Germany on account of the success which has attended the publication of Billroth's *Surgery*, Stricker's *Manual of Histology*, and other similar works, where, by restricting the field of labour, real and valuable additions have been made to our own knowledge in special branches. Unfortunately the attempt failed, fell "stillborn," to use a pardonable simile; but meanwhile Prof. Schroeder had devoted himself to the task of gathering together the results of his own investigations, and of developing a system of obstetrics having its foundation on the basis of modern physiology and pathology. The book which is the subject of this review is the result of his labour, and, although it is necessarily incomplete in many parts, as the author himself confesses, it must, nevertheless, be regarded as a most successful accomplishment of his laborious task. The experimental study of the physiology of gestation and parturition is of recent growth, and hence numerous points are still involved in the greatest obscurity, and many questions must be left unanswered; but this much at least is due to the student, that transmitted errors and unsupported theoretical statements shall not appear sanctioned by the addition of a new name; far better is it to tear away the flimsy veil which hides the existing gaps and spaces, and point out the need of closer scientific investigation of processes which are at present but imperfectly understood. By this means new life is infused into a science, and each reader is stimulated to original research, which sooner or later will bring in a rich harvest of accurate facts. That this is the spirit in which this book has been written is evident from a passage in the introduction, in which the author writes: "Beyond question the chief object of scientific teaching is to stimulate the student to think and investigate for himself."

The general plan of the work is that which is usually adopted, viz., a primary division into the physiology and pathology of obstetrics, but where any direct practical advantage could be gained by the grouping together of kindred phenomena, the author has not hesitated to sacrifice the unity of the work for this purpose. For instance all forms of hemorrhage are considered from a common stand-point, although a strict adherence to the scheme of the book would have rendered it necessary to treat them separately, under the respective pathological conditions to which they owe their origin. So, too, the group of symptoms occurring after

delivery, having in common the property of septic infection, are, on account of the great importance of presenting a complete clinical picture of the protean forms which this disease may assume, treated under the one head of puerperal fever. Though these deviations from a strictly logical division of the subject may give rise to captious criticism, the reader of this book who turns to it for practical instruction, will gladly pardon this fault, if it be one, in return for the benefit which he derives from it.

The author justifies the striking omission of any anatomical description of the pelvis, by a reference to the elaborate details furnished by works on descriptive anatomy. While this is undoubtedly true, we cannot but feel that the importance of a thorough and intimate knowledge of the obstetrical pelvis justifies us in expecting a more than passing notice of this subject in a special text-book, and, if the English translation, which is promised, is to become—as we both hope and believe it will—the general work of reference in this country, a more extended treatment of the anatomy of the pelvis is absolutely necessary. The subject of the pelvic planes, axes, diameters, and inclinations is one which presents many difficulties to the students, and points of interest to the specialist. The angle which the plane of the superior strait makes with the symphysis pubis is a matter of the greatest importance, in fact, as Kiwisch has stated, “the consideration of this anterior wall of the pelvis, is of *far greater* importance in a practical point of view, than the minute investigations which have been made to determine the angle of inclination of the entire pelvis,” because when this angle is exaggerated it oftentimes becomes the direct cause of tedious and difficult labour, and yet three lines have been considered by the author sufficient to exhaust this subject.

The views of Pflüger with regard to the cause of the phenomena of menstruation are thus summarized :—

“A constant irritation is exerted on the extremities of the nerves imbedded in the fibrous stroma of the ovary by the slow but uninterrupted growth of the Graafian follicle. This is not sufficiently intense to produce reflex action at once, but in the intermenstrual period, the total irritation (*die Summe der Reize*) is so great that reflex action takes place in the form of marked arterial congestion. This sudden increase in the amount of blood produces essentially too results; in the first place, that Graafian follicle which is the farthest advanced in development ruptures, in consequence of the increased intra-follicular pressure; while, in the second place, a hemorrhage takes place from the free surface of the uterine mucous membrane; hence the escape of the ovum from the follicle, and the menstrual flow, are joint effects of one and the same cause, viz., the pressure which the developing follicle exerts on the extremities of the nerves, which are distributed throughout the ovarian stroma.”

It would be easy to disprove this theory by reference to the experimental proof which ovariectomists have incidentally furnished in operations involving the removal of both ovaries, where the menstrual flow, proceeding from the mucous membrane of the uterus, still continued; but, regarding it simply from a histological stand-point, its value is somewhat impaired by the reflection that, up to this time, our knowledge in regard to the ultimate distribution of the ovarian nerves amounts, practically speaking, to nothing. As the result of special study on this point our own observations have led us to acquiesce fully in the statement of Waldeyer,<sup>1</sup> that “single nerve fibres are seen entering the hilus of the ovary, with the vessels, and dividing as they reach the parenchymatous

<sup>1</sup> Waldeyer Eierstock u. Ei. p. 18.

zone, into which, in spite of the use of the chloride of gold solution, (which has been of such signal service in the study of the nerves of the cornea and the human skin), I have not been able to follow them, still less to form any clear idea of their ultimate distribution."

The ingenious theory of Thury with regard to the formation of the sexes at will, by regulating the time of coition, has not been confirmed, at least so far as the human race is concerned, by the experience of the author. According to this theory, females are brought forth by the lower animals if impregnation takes place at or near the commencement of the time when they are "in heat," while males will be produced if the fruitful contact does not take place until the end of this period. In 29 cases when this theory was experimentally tested on cows, the wished-for result was obtained in each instance. Coste, however, did not confirm this observation, and Schroeder writes: "In cases when the date of the appearance of the menses and the time of cohabitation were accurately known or given, I have calculated the interval between these terminal dates, and found, that in 29 cases where males were born, the fruitful connection took place, on an average, 10.08 days after the appearance of the menses, while 9.76 days represented the same average result in cases where the product of conception was of the female sex; hence I am not in a position to extend to the human race this hypothesis of Thury."

In speaking of the position of the fœtus in utero, attention is called to the extreme ease with which changes take place in the relation of its long axis to that of the uterus. Scanzoni, even in the earlier editions of his text-book, called attention to the great mobility of the child, and to the spontaneous conversion of breech and transverse presentations into those of the head, and *vice versa*, even in the latter weeks of gestation. Credé confirmed this observation, and showed that this change takes place far oftener than is usually supposed, for, out of 240 recorded cases in the Leipzig clinic, there were only 7 in which the original position of the child was maintained unaltered to the end of pregnancy. In one case mentioned by Scanzoni, in the last edition of his text-book, the child turned six complete somersaults within five days, presenting now the head and again the breech. The value of this observation in its application to version by external manipulation during the latter weeks of pregnancy, as a mode of converting transverse into head or breech presentations, need scarcely be hinted at.

With the exposition of the physiology of parturition the real difficulty in the work commences, for each step in the process is still involved in more or less obscurity, and a description which represents truthfully the present state of our knowledge, must, of necessity, be incomplete and unsatisfactory. Take, as an example, the first question discussed, viz., the proximate cause of labour, and we find ourselves at once involved in uncertainty as to the relation which the uterine nerves bear to the motility of the organ. Relying on anatomical preparations and physiological experiments, Schroeder feels justified in asserting that "the sympathetic is the motor nerve of the uterus, but whether the sacral nerves can excite uterine contraction, or whether they should not indeed be regarded rather as inhibitory nerves, is a question which, to say the least, requires a doubtful answer." Towards the end of the tenth month the sympathetic is excited to reflex action by the irritation which the ovum exerts on the internal surface of the uterus, since at that time it has become a foreign body, owing to the fatty degeneration of the decidua destroying the vital

connection which has existed between it and the inner surface of the organ. By the slight contractions which are thus evoked by reflex action, still further separation of the decidua takes place, while this in turn gives rise to new irritation, so that the uterine contraction which has been awakened gradually increases in intensity and duration.

The condition of the cervix uteri during the later months of gestation is carefully described, and the observations of Holst, Duncan, and Taylor confirmed. The description of the shortening of the cervical canal, or the modification of this theory by Stolz and Cazeaux, which has for years been blindly copied from one treatise on obstetrics to another, are not found, but in their place a true and succinct account of the changes which take place as developed by a careful clinical study of the subject. In primiparæ the head enters the pelvic cavity at the end of the ninth or beginning of the tenth month, and depresses the anterior vaginal fornix to such an extent that the anterior lip of the cervix is effaced, the mucous membrane seeming to be inserted on a level with the external os. That the cervical canal, however, remains in its integrity can easily be proved by hooking the finger into the os uteri as soon as the first labour-pains have sufficiently dilated it, and straightening out the canal, when the internal os will be found at a distance of about three c. from the external orifice, so that the shortening of the canal is only apparent, not real. Attention is also called to the different condition of the internal os in primiparæ and multiparæ. In the first case it is an exceptional occurrence for the os internum to be sufficiently open at the ninth month to admit the point of the finger, while in multiparæ this is the normal state of affairs, so that the bag of waters, or even the presenting part, is accessible to the finger. In women who have borne children, the head does not usually enter the pelvic cavity before the first contractile efforts of the uterus, but, owing to the relaxed walls of the organ, inclines more or less towards the right or left iliac fossa, and is reached with difficulty, owing to the ease with which it escapes the examining finger, while in primiparæ the head usually enters or even descends into the pelvic cavity before labour commences.

Although presentations of the face and breech are included in the description of normal labour, the author has deemed a word of explanation or apology necessary in order to justify this deviation from a strictly scientific treatment of the subject. Presentations of the vertex should alone be considered as entirely normal, and even among these we find certain changes in the attitude of the child, caused by the greater or less departure of the chin from the breast, which must be regarded as deviations from the normal type. These deviations glide, however, so insensibly through arrested vertex to brow and face presentations, that no dividing line can be drawn, and it seems altogether advisable, as Schroeder has done, though evidently not without the reluctance which a German always feels at abandoning a fine-drawn distinction, to consider all cases, when nature unassisted is able to complete the labour if no disturbing elements are present, under the head of the normal mechanism of labour. The adoption, both in England and this country, of the German method of classifying the positions of the child, should be strongly urged. The want of harmony in the use of obstetrical terms is felt more and more acutely each year, as the intercourse between scientific men of different nationalities becomes more intimate and general. The primary division adopted throughout Germany into two positions, head and breech, is attractive on account of its simplicity, while it is sufficiently extensive to admit of a full development of the theory of the mechanism of labour.

"In presentations of the head and breech, the 'position' (*stellung*) of the child is of great importance in the consideration of the mechanism of labour. We have to decide, therefore, whether the back of the child is turned towards the right or left side of the uterus, and judge accordingly of the first or second position of the head or breech. It is also of importance to learn whether the head occupies a position nearly transverse, or is inclined more anteriorly or posteriorly. In the first position the head is usually turned more towards the front, in the second, more towards the back part of the pelvis, though this rule is by no means without exception."

The diagnosis of presentation and position by external examination is thoroughly treated, and its advantages in supplementing and corroborating the internal examination, and indeed, in some cases, in supplanting it, for instance where an unusually high stand of the head, or the formation of an extensive *caput succedaneum* renders the recognition of the position difficult or impossible, are prominently brought forward. The value of this method of examination has lately been urged upon the profession in a valuable monograph<sup>1</sup> by Dr. Richardson, of Boston, in which the subject is treated with the fullest detail. Halbertsma has suggested that this method should alone be used in the examination of patients during the prevalence of puerperal fever in large lying-in institutions, where it is desirable to avoid even the possibility of the examining finger carrying with it septic material.

The mechanism of labour is rendered somewhat complicated to English readers by the adoption of two new technical terms, introduced by Schatz, which can hardly be represented by English synonyms.

"In the first place the entire contents of the uterus, the ovum as a whole, is exposed to a uniform pressure, which Schatz designates as the internal uterine pressure. Since the muscular layers of the fundus are more developed than those of the lower portion of the organ, and since the internal os presents a space free from muscular tissue, the ovum is driven by this force towards this point, and effects its dilatation. Secondly, the uterus by its contraction tends to assume a globular a form as possible, and this takes place by the diminution of the long and transverse diameters, inasmuch as the antero-posterior diameter when the organ is relaxed is disproportionably small. The uterus is, therefore shortened from above downwards, and in the transverse diameter, and this effort to assume the globular form it is, which Schatz calls, '*formrestitutionskraft*,' or the force exerted by the attempt to assume the normal shape."

It is evident that these two forces correspond closely with those designated in English by the terms "clonic" and "tonic" contraction of the uterus, the one leading to the expulsion of the foetus, the other, by the shortening of the transverse diameter, bringing the long diameter of the foetus into correspondence with the long diameter of the uterus, while the contraction in this diameter assists in forcing the head to engage or descend into the pelvic cavity. It is no easy task to follow the description of the influence which these two forces, designated by initials only, exert, but the effort is repaid by the explanation of several phenomena which otherwise are with difficulty understood: for example, the formation of a *caput succedaneum* on the presenting head before the rupture of the bag of waters. One point in the description of the mechanism of labour is, however, of especial interest, viz., the importance which Schroeder attaches to the resistance of the perinæum in producing anterior rotation of the head. The inclined planes have little or nothing to do with the process,

<sup>1</sup> External Manipulations in Obstetric Practice, by W. L. Richardson, Boston.

nor need we invoke any complex theory involving the well-known parallelogram of forces, for the explanation lies in the simple fact that, owing to the complete flexion of the head, the posterior fontanelle is the part which descends deepest into the cavity of the pelvis, and is exposed first to the greater resistance of the posterior wall of the pelvis, and subsequently to that of the distended perinæum, which turns or presses it anteriorly, where there is comparatively no resistance until the locking of the occiput under the symphysis pubis allows a process of extension to take place. The perinæum only slowly distends, owing to the fact that the resistance it offers is nearly equal to the expulsive force, transmitted through the spinal column of the child, and during this time the occiput is pressed forwards towards the vulvar outlet by the upper part of the pelvic floor, so that whether the head presents with the occiput anteriorly or posteriorly, its rotation forwards is the rule, with but *few exceptions*; nor are these exceptional instances difficult of explanation, for we find, in certain cases in which slight pelvic contraction usually exists, that the anterior fontanelle enters and descends into the pelvic cavity as the presenting part, and hence is exposed to this same pressure from the posterior wall and perinæum, so that rotation anteriorly must ensue, as in the first instance, or, in other words, we have those exceptional cases where the occiput rolls into the hollow of the sacrum, and the forehead comes under the arch of the pubis. But even in these exceptional cases, when the anterior fontanelle engages first, when the head has reached the floor of the pelvis, the posterior fontanelle usually descends until it becomes the lowest part, and then the normal rotation anteriorly takes place. These are the cases in which rotation is so easily effected by the lever or forceps, in other words, where mechanical interference has effected that which nature would herself have brought about at the proper time.

In the portion of the work which relates to operative obstetrics we find a full and exceedingly practical discussion of the indications for the various operations, their relative value, and the influence which they exert on the life of the mother and child. The description, however, of the successive steps in each operation is condensed and brief. The instruments are described only in their simplest forms, and no attempt has been made to render the subject more easy of comprehension by illustration. We find the explanation of this want of detail in the fact that the author fully recognizes the necessity of continued practice on the phantom, or, better still, the maternal cadaver, in order to acquire facility in the mechanical execution of obstetrical operations, believing, as he does, that without this the most accurate descriptions and profuse illustrations are worthless. In surgery this fact has long been recognized, and attendance on a course of operative surgery has been considered indispensable, but in obstetrics the student has been left to perform operations requiring great manual skill and dexterity, with no other preparation than listening to the verbal descriptions of the lecturer.

With regard to the question which at present excites so much interest in this country, viz., whether the forceps should be applied to the sides of the child's head, or in relation to the sides of the pelvis, thereby grasping the head in an oblique diameter, Schröder only reiterates the teachings of the most prominent German and English authors. Nor is this to be wondered at, for the instrument which he employs does not compress the head to any great extent, but is intended simply to supplement a deficient "*vis à tergo*." The character and object of the special

instrument used should determine its mode of application, and hence it is manifestly unjust to apply the rules for the application of one pair of forceps to another instrument constructed on a different plan. In the German forceps represented by the various modifications of Naegele's, and in the English of which Simpson's may be regarded as the type, the greatest width of the blades from each other being three inches, no great compression of the head can be effected, and the normal mechanism of labour proceeds undisturbed within the blades. That this really takes place in most cases when there is no contraction of the pelvis cannot be doubted; the testimony on this point is unanimous, and in some cases its value is increased by the fact that it comes from unwilling witnesses. Scanzoni, who advocates a method of application peculiar to himself, whereby a rectification of position is effected, writes that "this rotation of the head within the blades of the forceps certainly does take place," but adds that it is more tardy than when artificially produced by the operator. With regard to the application of the forceps *on the sides* of the movable head, the sagittal suture occupying the transverse diameter, Schroeder says, "in order to grasp the head in the biparietal diameter, the blades must lie in the antero-posterior diameter of the pelvis. But, since they *cannot* be applied in this diameter, nothing is left, when the head is transverse, but to apply them in the oblique diameter." The application of the forceps on the movable head has however been abandoned by the common consent of the leading obstetricians both in Germany and England, and version by the feet is the operation which promises the most both for mother and child. Since Michaelis proved that contraction of the pelvis, more or less marked, is usually found in cases where the head remains movable and does not engage in the superior strait, and Simpson supplemented this teaching by his admirable paper showing the advantages which result in the extraction of the after-coming head in moderate deformity of the pelvis, both as regards the facility with which moulding can be effected, and the command which the operator has on the termination of the labour, the testimony of nearly all of the prominent obstetric teachers has been in favour of version by the feet, in preference to the difficult if not impossible application of the forceps on the movable head; witness the papers on this subject by Hohl, C. and G. Braun, Spaett, Scanzoni, Hecker, Schroeder, Barnes, Braxton Hicks, and other distinguished writers. In the conditions justifying the use of the forceps, we find it stated that "the cervix uteri must be effaced, and the os uteri at least sufficiently dilated to allow of the easy passage of the head." To this postulate many, we think, will object, for it excludes the use of the forceps in cases where the os uteri is sufficiently dilated to allow of their application, but not to admit of the passage of the head, until by means of traction efforts the head, grasped by the forceps, acting as a wedge, gradually causes dilatation. In these cases many hours might pass by before the complete dilatation which Schröder insists upon is effected and the propitious moment for the operation be lost.

In the rules for the manual extraction of the retained head in breech presentations, we find that, after a century of vain efforts to devise some means by which the critical moments when the child hangs between life and death shall be shortened, the manipulation recommended by Smellie and subsequently introduced into Germany in an objectionable form is again revived and made popular by Veit, and is now gradually superseding the use of the forceps, the "Prague manipulation" and other modifications. Since the use of the forceps has been abandoned, the

statistical results have shown a steady increase in the number of children born living in breech presentations. In the hands of Seifert and Scanzoni who employed the "Prague manipulation," 117 children out of 152 were born alive, but this method was not without danger, for in several instances the vertebral column of the child was luxated, and in at least one case the body was torn from the retained head, so great was the leverage exerted. On this account this mode of delivering the head has been abandoned in the Vienna clinic, and in most of the large lying-in hospitals on the continent, and Smellie's method or a modification of it substituted.

In recounting the indications for perforation we find a clear, honest, outspoken vindication of the performance of this operation on the *living* child, when the condition of the mother demands the completion of the labour while there is little or no hope of saving the life of the child.

"If the child is alive, the head must be perforated when a speedy termination of the labour is demanded on the part of the mother, while it cannot be effected in a manner which is not injurious to the child (forceps, version) and the mother refuses her consent to the Cæsarean section. This operation is then a justifiable one, because in all these cases, if the preservation of the life of the child is not absolutely impossible, it is in the highest degree improbable, while by longer delay the life of the mother is placed in the most imminent peril. That physician who adopts this rule for his guidance will be the means of saving the lives of many mothers, while he who refuses to perforate the head of a living child, or who does so only in the most extreme cases, will sacrifice one mother after the other, while he will not succeed in preserving the life of scarcely a single child."

This accords so perfectly with the moral aspect of the question which generally prevails in this country, that these words will attract but little attention, but in South Germany this emphatic statement will bear with it great weight, and will lead, it is to be hoped, to the immediate performance of the operation when the indication is clear, instead of having recourse to version by the feet, and, after a hopeless attempt at extraction, allowing some moments to elapse until the question of the life of the child has been *conscientiously* (1) eliminated, and then proceeding to perforation of the after-coming head, an operation which, although not involving any unconquerable difficulties, is certainly less easy of execution.

It is in the performance of craniotomy in cases of high contraction of the pelvis, that American literature will repay attentive consideration on the part of German obstetricians. In neglecting the use of the craniotomy forceps, destined to remove pieces of bone and thus to decompose the cranial vault, and what is, or should be, the chief aim of the operator, to destroy the integrity of the base of the skull, they deprive themselves of a most valuable aid in the performance of this operation. Simpson's cranioclast and kindred instruments cannot be used advantageously in cases of great deformity, for the head is in point of fact thrown more or less in front of, and overhanging the pubic symphysis, so that an instrument like the duckbill forceps of Dr. Meigs is the only one which will be of use. That this is a "long and tedious operation" cannot be denied, but its comparative safety, in cases of marked pelvic contraction, to compression with the cephalotribe, when a diminution in one direction involves, to a certain extent, a corresponding increase of pressure in the diameters not occupied by the forceps, or Paget's "*cephalotripsie répélée sans traction*," by which the mother is exposed to the risk of pelvic infection, should lead to a careful trial of its merits in a country



where deformities of the pelvis are so frequent in occurrence and so serious in character as in Germany.

The operation of version by external and internal manipulation has been so thoroughly developed by Braxton Hicks and Barnes, and the German literature on this subject has become so thoroughly incorporated with English teaching, that we find but little that is new to American readers with regard to this operation in the text-book under consideration.

After a general consideration of anomalies in the force and character of the labour-pains, and the obstructions to the birth of the child which may be caused by the existence of tumours of the vagina, uterus, ovaries, etc., the author proceeds to the consideration of deviations from the normal construction of the bony pelvis, and this portion of the book it is which will render it especially valuable to students of obstetrics in this country, for heretofore there has existed an absolute want of any scientific writing on this subject. The text-books intended for the use of midwives in Germany describe pelvic contractions more fully and satisfactorily than the most elaborate treatise which has been published in this country. We have, indeed, taken a certain amount of national pride in the fact, that contractions of the pelvis having their origin in rachitis or other causes are not to be found among us, are not, in fact, a part of our free institutions. But the admirable paper of Dr. Parry<sup>1</sup> proves that rachitis does exist, among our lower classes at least, in about the same proportion as that in which it is found in each of the large cities of Europe, and the pelves of those children who have in their infancy suffered from rachitis, must present, in the parturient woman, peculiarities which the practitioner, who is on the alert for these changes, cannot fail to detect. Since the publication of Michaelis's<sup>2</sup> work on the contracted pelvis, attention has been more and more turned to the fact that a diminution in the conjugate diameter, more or less marked, is the common cause of abnormal presentations, prolapse of the cord, premature rupture of the membranes, tardy dilatation of the os, wedging, and œdematous infiltration of the anterior lip of the cervix, with secondary uterine inertia, or tetanus uteri. These conditions are so commonly associated with pelvic contraction that their existence should always lead to a careful examination of the capacity of the brim. In the treatment of this subject, Schroeder has again sacrificed unity of arrangement for practical utility, and, having separated the two forms of contraction which are of common occurrence from those rarer types which possess only scientific interest, has developed for these alone the mechanism of labour, and laid down the principles by which the treatment should be decided. Attention is especially directed to a form of contraction which has heretofore met with no recognition in this country, where the alterations produced by rachitis and osteomalacia have alone been studied. And yet this form is so common that, according to some authors, it is found oftener than all the other forms put together. The description of the "simple flattened non-rachitic pelvis," by Schroeder, contains nothing new, being based as it is on the previous labours of Michaelis and Litzman; but the importance of the subject justifies a translation of his condensed account of the peculiarities of this special contraction, which is readily recognized, and which, when understood, furnishes the explanation of many cases of delayed and difficult labour.

<sup>1</sup> American Journal of the Medical Sciences, January and April, 1872.

<sup>2</sup> Das Enge Becken, G. A. Michaelis.

"At the first glance it has the appearance of a normal, nay, even of an unusually well-formed pelvis; by instrumental measurement, however, the flattening (*abplattung*) in the conjugate diameter is readily discovered. This is caused by the projection of the sacrum into the pelvis, without, however, a rotation taking place on its transverse axis. Hence the antero-posterior diameter is shortened in every pelvic plane, but principally in the superior strait; so that the relation of the antero-posterior diameter of the cavity and the outlet to the conjugate is approximately the same as in the normal pelvis. At the same time, a nearly equable diminution in the size of all the pelvic bones, especially the sacrum, is manifest, so that the transverse diameter would also be shortened, if the sinking forwards of the sacrum did not prevent it. For since this bone is attached to the posterior superior spinous processes of the ilium by strong, unyielding ligaments, great traction must be exerted at these points by the anterior inclination of this bone. If the pelvic ring was not closed anteriorly at the symphysis pubis, it is evident that the iliac bones would of necessity be separated thereby the one from the other. Their firm union at this point preventing this, however, this great traction on the posterior spines, while the bones are relatively yielding, must increase to some extent the transverse diameter, and cause the symphysis pubis to approach somewhat nearer the sacrum. Given, then, a pelvis equally contracted in all diameters, this result would follow a marked projection of the sacrum into the pelvis, if occurring in early youth, viz., the antero-posterior diameter would be somewhat shortened, while the transverse diameter would be lengthened by the traction on the posterior spinous processes of the ilium; this increase would, however, be counterbalanced by the approach of the symphysis to the sacrum. The transverse diameter is, therefore, increased, the conjugate for two reasons diminished, but since the pelvis was originally somewhat contracted in all diameters, the transverse has become normal, while the antero-posterior is notably diminished. As regards the cause of this deformity, the prejudicial effect of encouraging little children to sit up and run around at too early an age, and also of allowing them habitually to carry too heavy burdens, whereby the weight of the upper portion of the body is increased, must be borne in mind."

This description shows clearly the differences which exist between this form of contraction, and the well-known rachitic deformity with which the profession is already familiar.

The description which follows of the mechanism of labour in contracted pelves is of extreme value, for not only should these deviations and irregularities call attention to the possibility of contraction, but should of themselves, in most cases, suggest the particular form by which they are produced. As we have confined ourselves to the flattened, non-rachitic pelvis, on account of the great frequency with which it occurs, we will complete the picture as given by Schroeder by pointing out the peculiarities which characterize the mechanism of labour in these cases.

"We have seen in the study of normal labour, that, the resistance to the descent of the forehead and occiput being equal, the latter which lies nearest to the propelling force must of necessity first enter the pelvic cavity; if, however, the antero-posterior diameter of the pelvis is diminished, an obstacle will be presented to the entrance of the head, which will be most marked at the point of contraction. This resistance is much nearer the occiput than the forehead, so that, in spite of its being at the end of the longest arm of the lever, the forehead will become the lowest point. As soon, however, as the chin has departed from the breast, the line of the direction of the expulsive force, represented by the vertebral column, falls nearer the forehead, and the anterior arm of the lever becomes the shortest, hence, as the resistance to the descent of the occiput has increased, and as it has now become the relatively or absolutely longer arm of the lever, the forehead must descend still lower.

"In the simple flattened pelvis, therefore, the head enters the pelvic cavity with the forehead lower than the occiput, or, in other words, as the presenting

part, and, as soon as the labour-pains have fixed the head in the superior strait, the sagittal suture is found to run nearly transversely, or only slightly obliquely, and is in the neighbourhood of the sacrum, the anterior fontanelle being not far from the promontory, in the first position rather to the right, in the second position rather to the left of it. The biparietal diameter of the child's head, therefore, no longer occupies the contracted conjugate, but the smaller and more compressible bi-temporal. In this manner, the sagittal suture running transversely, and the anterior fontanelle low down, the head passes into the pelvis. As soon as the contracted conjugate is passed, the presenting forehead finds increased resistance in the pelvis, and the occiput now descends, the posterior fontanelle being easily reached by the examining finger, and becoming eventually lower than the anterior fontanelle. If the preponderating resistance of the posterior pelvic wall over the anterior is felt when the large fontanelle is the presenting part, it turns anteriorly, and later in the process again rotates posteriorly, while, if both fontanelles are on about the same plane, the transverse position of the head is maintained for a long time, the posterior fontanelle turning anteriorly only when it is deeply engaged in the pelvis. The remaining steps in the mechanism of labour proceed as usual, for the diameters of the outlet are normal."

In the treatment of cases when the increased resistance and difficulties to be overcome only excite increased uterine action, no operative interference is necessary, but if the contraction is marked, or if the condition of the mother or child demands the early termination of the labour, version by the feet is the means by which the interests of both are best secured. The restriction which the author lays down to the use of the forceps will seem to many too absolute, and we fear that many an infant life will be sacrificed to craniotomy, which a judicious use of a conservative instrument would have saved.

"So long as the head is not so firmly impacted but that the hand, after a free use of chloroform, can pass by it, version is indicated. If this is not possible a *master in the art* may apply the forceps, and by regular though powerful traction efforts attempt to deliver the head, which is arrested in the contracted portion of the pelvis; for if he is not successful he will know when to lay aside the instrument; but the beginner, if the head does not follow his traction, will only exert more and more force, while the dread of failure makes the sweat roll from his brow, so that finally the forceps, which should be a conservative instrument, is converted into a most dangerous implement. The forceps must not be used, then, in narrow pelves until the obstacle has been entirely or almost entirely overcome. In most cases of this sort nature alone will then be able to complete the expulsion; but in exceptional cases it happens that the natural forces will become exhausted in overcoming the obstacle, and that the head remains a long time impacted in the pelvic cavity. Then the forceps are in place, then they are a harmless, conservative instrument; but then they are employed not on account of the contracted pelvis, but on account of uterine inertia. If the head has not yet passed the superior strait, while the condition of the mother imperatively demands the completion of the labour, there remains only the sad alternative of allowing both mother and child to perish, or, in order at least to save the mother, to shorten by interference the life of the child, which is in such cases always lost; in other words, to perforate the head of the living child. If benefit to the mother is expected from this operation, it must not be delayed until she is in such a condition that the completion of the labour is no longer of any advantage to her, but it must be performed at such an early stage in the labour that the prognosis for the mother is favourable. It is one of the most difficult tasks of the accoucheur to determine correctly the moment when, on the one hand, there is a fair chance of preserving the life of the mother, and, on the other, to avoid destroying a child's life which might have been preserved."

This giving up of all effort to save the child by forced traction, which may jeopardize its life, and resorting at once to craniotomy, by which the

life of the child is certainly lost, is not a step forwards; it recalls the teaching of the old Dublin school, when all attempts to deliver by the forceps were substituted by delay and a final resort to craniotomy, with this difference, that in the Dublin school all operative interference was deferred until the mother, as well as the child, was sacrificed, while if the teachings of Schroeder are followed, the life of the mother will almost certainly be saved at the expense of the offspring.

In the chapter on puerperal fever the author has grouped together a series of morbid phenomena, "which are characterized in part by their acute pernicious course, in part by their tendency, at least, towards such a course, and by their owing their existence to a common cause," and has developed a picture which is unrivalled for the clearness and accuracy with which the pathological anatomy, clinical history, and treatment of this dreaded accident of the lying-in room are described. Under the term "puerperal fever," all those diseases of lying-in women are included which follow and are produced by the absorption of septic material, that is of organic matter in a state of decomposition. In all probability this material is never, or at all events rarely, absorbed through the skin or a mucous membrane which is intact, a fresh wound or raw surface being necessary in order to render absorption possible. This infection may take place either from the mother herself or from external sources. In the first case the septic matter may be furnished either by the decomposition, or breaking-down of a new growth, such as carcinoma of the cervix, or from a sloughing wound of the maternal parts, or from the decomposition of a partially retained placenta or membranes. Great stress is laid on the possibility of infection by means of the examining finger, instruments, sponges, etc., and many illustrative cases are cited. The term *contagious* cannot, strictly speaking, be applied to puerperal fever, for by this we mean those diseases in which a *specific* poison is generated in the affected organism, which, when transferred to other individuals, produces in turn the same specific disease in every case; for instance, measles, scarlet fever, smallpox, syphilis, etc. The secretions of puerperal fever patients will, it is true, if brought in contact with other lying-in women, generate puerperal fever, but these secretions have nothing specific in themselves, originating as they do, wherever organic matter is in a state of putrefaction, and producing phlegmonous erysipelas and septicæmia in surgical patients just as certainly as they do puerperal fever in lying-in women. Although, therefore, puerperal fever cannot be called contagious, in the strictest sense of the word, still the fact that it may be, and is, communicated by the examining finger, must not be lost sight of.

While it cannot be denied that absorption may take place at the placental site, still, in point of fact, this seldom occurs, for the infectious matter is rarely brought in contact with this point. The slight lacerations which always take place in the cervix, and the almost never-failing abrasions and superficial tears in the mucous membrane caused by the passage of the child's head through the vagina and vulvar outlet, are, however, the principal sources through which the septic material is absorbed, for with these parts the examining finger of the accoucheur is brought in frequent contact. The question of the ætiology and pathological anatomy of the disease is fully discussed, and the views of Virchow, Buhl, Recklinghausen, Bergmann, and others, are presented in detail, and subjected to a critical examination. The importance of this subject makes it impossible to abstract this portion of the work without

exceeding the limits of a review; and we have the less reluctance in abandoning this task because an English translation, the work of a thorough student of German obstetrical literature, will soon be laid before the medical profession of this country, and an opportunity be thus afforded of comparing in a compact and condensed form the views of the most prominent writers on these vital questions.

It is in no spirit of exaggeration or indiscriminate praise, that we venture to say, that the appearance of this book in an English form will exert a powerful influence on the practice of obstetrics in this country. For the first time the physiology and pathology of the process of gestation and parturition will be presented in a new and simple form, viz., as manifestations of the same laws which govern vital action in other parts of the body, modified only by the peculiar character of the organ in which these processes take place. Time-worn, hereditary descriptions, copied from one author to another, traditions of the lying-in room which have so long checked and retarded the spirit of advance, will not be found, but, in their place, a healthy spirit of investigation and original research which has given vigor to the style and freshness to the matter of the book. The spirit in which it is written is evident on every page; its object is not by vague and general statements to present the science of obstetrics as a perfect whole, but, rather, by pointing out the gaps and imperfections, and by suggesting special subjects of investigation, to interest and stimulate the student, so that he too, in time, shall bring forth good fruit, and add something to the development of the unity of the science.

W. F. J.

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ART. XXI.—*The Physiological and Therapeutical Action of the Bromide of Potassium and Bromide of Ammonium.* In two Parts. By EDWARD H. CLARKE, M.D., and ROBERT AMORY, M.D. 16mo. pp. 178. Boston: James Campbell, 1872.

THE little volume before us is of more than ordinary value. The attention of the profession has, for some years past, been very much directed towards the drugs herein considered. Unlike most of the new-found panaceas and specifics enthusiastically vaunted by men of unphilosophic minds, the bromides do not depend for evidence of therapeutie worth upon the limited experience of a few doubtfully qualified observers. Neither have we been asked to prescribe them on purely theoretical grounds, in the presence of which facts have been ignored or perverted. Clinically their merits have been tested and affirmed by many of the most distinguished and scientific physicians of England, France, Germany, and America. In one respect, indeed, they possess an exceptional interest and an extraordinary importance. Not only is there abundance of the best testimony to their value in many diseases and for many purposes where they compete with other drugs, but also to a peculiar and almost specific efficacy in the treatment of epilepsy. The experience of scores of leading physicians, and that of hundreds unknown to fame, has demonstrated that these salts exercise a controlling influence over that most terrible and hitherto most hopeless of maladies. When, moreover, we add the consideration that, in most cases, their therapeutie uses are suggested, explained, or supported, by the results of physiological experiment, we

cannot fail to acknowledge the great importance of special and scientific investigations into the action of the bromides in health and disease.

The fact, too, that nervous diseases seem to be peculiarly the scourge of our times, notoriously difficult of treatment, and often foiling our best efforts towards cure, should lead us warmly to welcome additional proofs of the trusty temper of the new weapon offered to our hand. Had the hundreds of salts and simples that stuff the bursting covers of our dispensatory been tested by the best modern methods, their number would have been vastly and most mercifully diminished.

The experiments of Dr. Amory, illustrating the physiological effects of the bromides on men and lower animals, appear to have been made with much care. His statements of them, though generally clear, concise, and adequate, are yet, in several instances, rather lacking in grammatical correctness and in precision of language.

Solutions of bromide of potassium are found to be rapidly absorbed by the mucous membranes of the mouth, stomach, and rectum. A few experiments to test the practicability of introducing the salt through the skin, by means of baths, reveal the curious fact that, while a small amount may be thus introduced into the circulation from a cold solution—70° or 72°—absolutely none is absorbed from a hot one—96° to 108°. Dr. Amory observes that this experiment illustrates and confirms the proposition of Dr. Stillé, that in a warm bath the body exhales, while in a cold one it imbibes.

The secretions of the salivary glands and of the mucous membranes are found to be generally diminished, under the use of bromide of potassium. During the first day or two, however, they may be slightly augmented. Under continuous exhibition of the drug there is usually dryness of the throat and pulmonary mucous membrane, and a tendency to constipation. It seems difficult to establish any decided change in the amount of urine excreted.

While absorption of bromide of potassium by the mucous membranes is very rapid, its elimination is somewhat more gradual. It may very soon be detected in the saliva, even after due care in cleansing the mouth. As this secretion, however, is mostly swallowed and reabsorbed, it can hardly, as Dr. Amory justly remarks, be said to aid in elimination. A very small amount of the salt may be found in the perspiration. Practically, however, the kidneys may be considered almost the sole gate of exit for this drug. Several careful attempts to detect it in the *feces* entirely failed. Dr. Amory is convinced that the bromide undergoes no change or decomposition while in the system, but comes out precisely as it went in.

To ascertain the effect of the bromide of potassium on the capillary circulation, a solution was applied to the web of a frog's foot, while the circulation in another foot of the same frog was observed under the microscope. After a few moments of excitement, the circulation became less rapid, the arterioles diminished in size, and the blood in arterioles, capillaries, and venules was scanty. Here follows a sentence which is not very happily expressed: "Half an hour or more after this, when the animal has become calm, the blood returns to the capillary system in rather larger amounts than before; and in a little while the constriction or tetanus of the arterioles is noticed, which continues some time." To what period do the words "than before" refer? Is it meant that the amount of blood present is greater than before applying the solution, or than at some moment during the observation? "The blood," it is immediately added, "in the venules diminishes and approaches more to the colour of that in

the arterioles. If the muscular tissue be now observed without the aid of a lens, it will be found to be pale and exsanguine, which is due to this modification in the supply of blood to the capillary system." The writer goes on to mention, that Voisin has remarked upon the pallid skin of patients under continued use of the bromide; and quotes, without dissent, Meuriot, as follows: "The bromide of potassium exaggerates the arterial tonic, tetanizes the arterioles, slackens or arrests the circulation, and produces an oligæmia of the tissues."

It has been proved, Dr. Amory tells us, that "upon frogs the sedative action of this drug is upon the vaso-motory system." To support this opinion, one of the curious experiments of Dr. Lewisky is quoted, in which two frogs, one in a normal condition, and the other under the influence of bromide of potassium, suffer precisely similar amputations of the toes, with the result that, while from the stumps of the healthy animal there exuded, in a given time, eight or nine drops of blood, his poisoned brother shed but two. This experiment, often repeated, and under the fairest conditions, is justly regarded by our writer as proving the same sedative effect on the vaso-motor nerves as was shown by his own different experiment. Dr. Amory believes that the effect of the salt on the vaso-motor system is the primary one; the general nervous sedation being secondary to, and dependent on, the stimulation of the vaso-motory nerves.

Another experiment upon a frog, made by Dr. Amory with the utmost attention to every detail necessary to make the trial perfectly fair, seemed to indicate that bromide of potassium, directly applied to a nerve, destroyed the galvanic excitability of that nerve. Yet, he candidly adds, the conclusion was not confirmed by subsequent experiments on dogs and rabbits.

After stating and comparing the somewhat diverse views set forth by different writers as the legitimate results of experiments, concerning the exact manner in which the nervous system is affected by the bromides, Dr. Amory gives his own views of the order of phenomena. Stimulation of the vaso-motor nerves causes diminution of blood in the capillaries, and, consequently, lowered sensibility in the peripheral extremities of the nerves of sensation. This in turn, acting in conjunction with a correspondent anæmia and lessened sensibility of the nervous centres, causes diminution of reflex activity. However strongly we may be inclined to accept this explanation of the phenomena, the experiments adduced in its support do not seem so conclusive as we could wish.

From some twenty experiments upon the action of the bromide of ammonium, Dr. Amory is led to believe it almost identical with that of the other salt.

We cannot take leave of this division of the book without reiterating a belief in the very great value of this class of researches. Upon such the medical practice of the future may probably be largely founded. This branch of study, moreover, opens a wide field for useful and honourable labour to the ambitious student and to the graduate still unburdened with business. We are glad to see that Harvard University has created a lectureship expressly for its cultivation, and has placed Dr. Amory in the position.

The portion of the volume prepared by Dr. E. H. Clarke, while it cannot fail to obtain general appreciation, will yet be especially valued by those readers who know the character and ability of the writer. Men who have listened to his lectures, or enjoyed his less formal instruction in the "Summer school" of a dozen years ago, will place great trust in the good sense, discrimination, and perfect honesty of his observations.

Dr. Clarke begins by stating that the therapeutic value of the bromides is to be established solely by clinical observation. Correct knowledge, however, of its physiological action is, he adds, the only safe guide to its employment in disease; though we must not forget that the action of a drug given during a pathological state does not always precisely correspond to that observed in health. With this particular group of remedies, however, the difference between physiological and therapeutic activity seems to be less than is the case with most efficient medicines.

In regard to promoting absorption of the bromides by the mucous membranes, one or two practical hints are given. The dose should not be exhibited with meals or during digestion, since the acids at such times present in the stomach might decompose the salt, and set free the highly irritant bromine. Given when the stomach is at rest, and consequently neutral, it is absorbed unchanged and without causing irritation. Still further to guard against decomposition through accidental or morbid acidity of the stomach, Brown-Séquard and some others add to their prescriptions a carbonate of soda or ammonia. That absorption may be prompt and complete, Dr. Clarke counsels the use of a very weak solution—not more than eight grains to the ounce. In cases where inflammatory or degenerative disease of the stomach indicates the advisability of administering by the rectum, the solution should be cold, and not stronger than ten grains to the ounce. Observing these conditions, the action of the drugs may be fully obtained by rectal injections.

Dr. Clarke directs attention to the fact that the absorption of these salts is very rapid, while elimination, though at once begun, is comparatively slow. Hence in continuous administration there is a tendency to accumulation in the blood. The greater part of a single dose is excreted in eight or ten hours; but some portion remains for days. While, on the one hand, if it be desired to keep a large amount of the salt constantly in the blood, the doses must be never wholly suspended, yet, on the other hand, if more be continuously given than can be eliminated, it must accumulate to an unnecessary and perhaps injurious extent. We are disposed to believe that the unpleasant and sometimes alarming symptoms known as *bromism* indicate always a needless saturation of the blood. We believe the doses should be restricted or diminished in proportion as the system appears to be pervaded with the drug.

The sleep-procuring action of the bromides is well described. It seems to correspond with, and confirm, the generally received doctrine, that natural sleep is dependent on moderate cerebral anæmia. When the brain had been actively exercised—short of exhaustion—Dr. Clarke found that thirty or forty grains of bromide of potassium caused the refreshing sleep which otherwise would have been long delayed. The same, taken when the brain was neither excited nor exhausted, simply made the slumbers unusually profound. Taken, however, when, by protracted and exhausting labour or long watching, the cerebral circulation had become already too low, the dose procured tranquillity, but not sleep. In none of these circumstances could any ill effects be detected the next day. Assuming that, ordinarily, wakefulness is due to superabundant, and exceptionally to deficient, circulation of arterial blood in the brain, Dr. Clarke finds that the hypnotic action of the bromides agrees with the ideas derived from physiological experiment, as to their effect in producing contraction of the arterioles. In the exceptional cases, where vigilance



is due to deficient circulation of arterial blood in the brain, he considers a cup of beef-tea, or a stimulant, as the best possible hypnotic.

In giving the bromide of potassium to procure sleep, it is remarked that two small doses during the day, and one tolerably full dose at night, are usually much more effective than the total amount given at once. Experience has also taught, that though sleep might not follow a single dose, or one day's dosing, yet it will often be obtained by a few days' perseverance. Dr. Clarke has not found that the use of the bromides to procure sleep is productive of troublesome drowsiness in the daytime. As might be expected, these salts are not so much adapted to relieve the acute pain of inflammation, as to allay restlessness, excitement, and reflex irritability.

Dr. Clarke's experience confirms Dr. Da Costa's as to the fact that a preliminary dose of bromide of potassium increases the efficiency of an opiate, while it lessens the reaction.

The peculiar and somewhat alarming train of symptoms which often follows the protracted use of the bromides in full doses is quite fully described. We need hardly dwell upon this portion of the essay, further than to reiterate the opinion that the salts should not be given in such a way as to produce, or, at all events, maintain, such grave constitutional disturbance. If, however, any one think otherwise, there is consolation in the unvarying and universal testimony of all writers on the subject, including Dr. Clarke, that all ill effects will surely and speedily disappear upon omitting the medicine. Still, in the face of this strong evidence, before by the deliberate continuance of treatment reducing a patient to the depths of physical and mental impotence, we should hesitate long.

Dr. Clarke, in a hint worthy of notice, reminds us that most of the experiments on physiological action of the bromides have been made with single or only intermittent doses; while in practice we often keep the blood constantly loaded with the drug. With the single or sleep-procuring dose, the physiological experiments come in close relation. With the prolonged exhibition, the relation of the experiments is much less near, and too exact correspondence should not be counted upon. It would seem worth while to institute a new series of observations upon the physiological effects of continued doses.

The cases and observations of the essayist support the idea that, in some way, the bromides diminish reflex activity. The precise manner in which they act, the exact order or sequence of the different steps, is not easy to be determined. Whether the primary action is upon the peripheral nerves, soothing and removing morbid irritability, and thereby secondarily tranquilizing the centres, or whether the converse order is the true one, or whether finally, back of all other phenomena, the effect be produced by specific influence of the drugs on that nerve-system (probably sympathetic) which controls the muscular coats of the arteries, stimulating these to contraction, we shall not attempt to decide. Nor do we find that Dr. Clarke assumes to be absolutely exact in stating the *modus operandi*. It is certain, however, that many morbid conditions, dependent on the over-excitability of various reflex functions, are wonderfully controlled by the bromides. It is needless to enumerate all the different diseases and symptoms whose removal, well attested by Dr. Clarke and other trustworthy observers, seems to depend upon this property of these salts. Wherever diseased manifestations appear to be due to excessive reflex activity, without palpable eccentric cause, these remedies may be given with great hope of relief.

In the essay before us, and in many other writings, reference is made to

a special influence of a soothing or even anæsthetic nature, exercised by the bromides upon the mucous membranes. Where hyperæsthesia exists, as in irritable bladder or urethra, irritative cough, tickling in the throat, etc., the salts may prove extremely useful.

Dr. Clarke adds his testimony to that of many others as to the general anodyne and soothing efficacy of the bromides. He attributes their therapeutic value in all cases to diminished circulation of blood in the brain and spinal cord.

As to the use of the bromides in epilepsy, Dr. Clarke modestly premises that his own experience has not been large. Of twelve cases which he has recorded, treated by the bromides, three have had no fits for many years, three none for a year past, and two were not benefited.

We had intended, in beginning this notice, to consider at some length the treatment of epilepsy by the bromidal salts. No other application of them has seemed to give such immensely valuable results. The terrible disease, heretofore almost wholly irresponsive to medicine, seems to respond wonderfully to the new treatment. But in studying the disease and the remedy, the character of one and the mode of action of the other, we find so many exceptional and contradictory phenomena, so many apparent difficulties and inconsistencies, which cannot be ignored, but which properly to discuss would require much time and space, that we are compelled to refrain from anything more than a passing glance.

One question is so sure to arise in the mind of one who compares the known action of the bromides on the bloodvessels with the very generally received idea that cerebral anæmia is the immediate cause or condition of the epileptic paroxysm, that we must at least hint at a possible answer. "If the paroxysm depend on instantaneous cerebral anæmia, how is it prevented by giving drugs that have a known tendency to constrict the vessels, and produce to a certain extent the very condition that makes the mischief?" To this it may be replied, that the action during an actual paroxysm may not be remedial. The period of anæmia lasts but an instant, and is followed by great vascular engorgement, due to arrest of respiration and to muscular action. So, from momentary deprivation of blood, the cerebral condition changes to one of congestion, and that with poorly aerated blood. Repeated paroxysms, always ending in great and prolonged venous congestion in the nervous centres, may reasonably be supposed to produce at last a lax and toneless condition in the often distended capillaries and arterioles, as well as in the veins. Now is it not in consonance with known laws, that the loss of their natural tonicity and elasticity should predispose these vessels to spasmodic and abnormal efforts to contract? If this be so, the bromides, by restoring tone to the weakened vessels, would promote healthful regularity and diminish the tendency to spasm. Moreover, the restoration of tone to the minute vessels would inevitably tend to improve the nutrition of the centres, which must suffer from the comparative stagnation and venous character of the blood in dilated capillaries. Centres well nourished are less prone to morbid function. It is the quickly moving, oft-renewed, well-aerated blood, coursing through elastic channels; not the dark fluid, half-stagnant in lifeless bags, that makes healthy growth and action. That dilatation of the bloodvessels of the medulla oblongata is generally found upon examination of old epileptics, is the belief of Schroeder van der Kolk and others. This condition is noticed also by some distinguished observers, who attribute epilepsy not to cerebral anæmia, but to hyperæmia of the medulla oblongata.

In connection with some remarks on the value of the bromides in hys-

terin, not in checking a particular attack, but in modifying the peculiar excitability which lies behind the more striking manifestations, the suggestion is made that perhaps we ought not to speak of these medicines as curing either hysteria or epilepsy. Their action is rather to be regarded as analogous to that of splints upon a fractured limb, securing rest, during which nutrition and repair can go on uninterrupted. This naturally leads to the practical corollary that, during the precious hours of respite from convulsions, the wise physician will do all things possible to improve the health and vigour of his patient, by regulating and strengthening all the natural functions. Not only is tonic treatment indicated on general principles, but it tends to prevent the development of the unpleasant results called "bromism." Great stress is laid upon the necessity, in epilepsy, of keeping the system constantly and pretty uniformly under the influence of the remedy. Relapse, after long freedom from convulsion, often follows omission or too sudden diminution of the dose. A chronic disease requires chronic treatment.

Dr. Clarke quotes from this *Journal* (Oct. 1870, p. 420), a remarkable case of poisoning by strychnia, in which bromide of potassium seemed to act as a veritable antidote. He regards the two drugs as diametrically opposed in their respective action on the medulla.

As to the relative therapeutic merits of the different bromides in use, the general impression seems to be that there is very little choice. One will sometimes procure sleep, when another, especially after repeated use, has failed. Dr. Clarke, however, fully confirms Brown-Séquard in regard to the greater efficacy of a combination of the potassium and ammonium salts, over either alone. There is said, also, to be less danger of "bromism" when the two are given together. The lithium salt is very costly, but is reported by some good observers to be more effective than the others, both as a hypnotic and for the relief of epilepsy. Bromide of sodium is somewhat variously estimated, but claims no advantage over the others. Dr. Hammond, of New York, thinks bromide of calcium superior as a hypnotic, and especially useful in the convulsions of children. Dr. N. H. Norris, of Wisconsin, believes the bromide of iron to be almost a specific for seminal emissions and kindred troubles, as well as a powerful hypnotic, and a valuable tonic.

We have not thought it advisable to attempt to name every disease in which the bromides have been recommended. A glance over the journals and compends shows the number to be enormous. In the essay before us, the aim seems to be rather to point out the principles on which the salts act, and to give practical hints respecting their employment, than to specify every malady in which they have been given. Dr. Clarke's monograph strengthens our belief, that in this group of salts should be recognized one of the few really valuable additions made to our list of remedies during the present century.

The volume is very neatly printed on tinted paper. It has a table of contents, a good index, and a list of the works and authors consulted. The matter of each essay is well arranged, while that of Dr. Amory is preceded by a brief analytical statement of the points to be made. Fault might be found with the order of the two parts, since as here printed the clinical and therapeutic precedes the physiological portion, in opposition to the natural sequence. In point of fact, too, the physiological essay was written, and elsewhere published, a year or two before the other. We suspect that the explanation of this arrangement is to be found in Dr. Amory's graceful deference towards his senior.

B. L. R.

## ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXII.—*Autumnal Catarrh (Hay Fever)*. With three Maps. By MORRILL WYMAN, M.D., Late Hersey Professor Adjunct of the Theory and Practice of Medicine in Harvard University. 8vo. pp. 173. New York: Hurd & Houghton, 1872.

DR. WYMAN, who has evidently devoted much time to the study of his subject, is convinced that in this country two separate and distinct forms of annually recurring disease are confounded under the name of "hay fever." One of these, known as the "rose cold" or "June cold," generally commences early in the summer and continues until the first week in July. This corresponds, he says, in most of its symptoms and in the time of attack with that popularly known in England as the "hay fever" or "hay asthma"; but that the two diseases are not completely identical, appears from the fact that individuals who have suffered here with "rose cold" have entirely escaped any similar disease during summers which they have spent in England or on the continent.

The other form occurs in autumn, and has received very little attention from medical writers. Although himself a sufferer from it, and therefore interested in looking up the literature of the disease, the author has not been able to meet with a description of it earlier than his own in 1854, when he described it in his course of lectures in the medical school of Harvard University; his knowledge of it having been gained, partly from his experience of it in his own person, and partly from observation of the few cases which had at that time come under his care for treatment. In May, 1866, he embodied the facts then known to him in a paper which he read before the Massachusetts Medical Society at its annual meeting in Boston. Since then he has had more frequent opportunities for examining the subjects of the disease, and has availed himself, whenever this was possible, of the experience of other physicians. To render the histories of the cases, which are appended to the volume, as accurate as possible, they were written and corrected in the presence of the patients; in many instances the words used by them being given, in order to disabuse the reader of the impression that the author has allowed his own views as to the nature and course of the disease to have an undue influence upon him.

Dr. Wyman proposes to give to the disease which he describes the name of autumnal catarrh. This name he prefers to those in general use, because it is in conformity with the nomenclature of Dr. Bostock, who it will be recollected called the "June cold" *Catarrhus Æstivus*,<sup>1</sup> and because it involves no theory as to its cause, of which very little is known. He uses the term catarrh to indicate "a condition of the mucous membrane, accompanied by a flow of a thin secretion, not necessarily implying inflammation," while the word autumnal designates with sufficient distinctness the season of the year at which it takes place. The popular names of "hay fever" and "hay asthma" are inappropriate as indicating the disease under consideration, simply for the reasons that

<sup>1</sup> Medico-Chirurgical Transactions, vol. x. and vol. xiv.

in most of the regions where it occurs, the hay has been cut and gathered in long before its appearance, and that "it is only in exceptional cases that the smell or dust of hay, any more than any other dust, produces uncomfortable sensations in the subjects of this disease." Asthma, although a frequent attendant upon the disease, is not a necessary accompaniment of it, and is rarely so prominent as some of the other symptoms.

We are sorry that want of space will not allow us to reproduce in full the admirable outlines of this disease which Dr. Wyman has traced for us; we shall endeavour however, as briefly as possible, to lay before our readers a sketch of its principal characteristics. In the first place, nothing connected with it is more remarkable than the regularity with which, in the majority of cases, its first symptoms are observed every year about the 20th of August, and even it is said in some instances at the same hour of the day. A slight itching in the palate and in the parts connected with the throat generally first reminds the sufferer that the time for his annual attack has arrived. In a few cases, however, the symptoms are preceded by evidence of constitutional disturbance. In a day or two there is superadded an irritation of the lining membrane of the nostrils, which gives rise to a sense of obstruction, and to attacks of sneezing occurring in paroxysms, and at first only in the morning. These attacks are generally relieved by active exercise, or by whatever else diverts the blood from the head. Later, there is a discharge from the nostrils of a limpid fluid almost free from mucus. It is occasionally so abundant that when the head is inclined forwards it will run out of the "nose like water from a pitcher almost." This is accompanied by watering of the eyes and itching of the eyelids, causing the patient to rub his eyes violently, which gives rise to intense congestion. Subsequently, the eyelids are observed to be swollen and to be the seat of an eruption of pustules or sties, which are most numerous along the line of insertion of the eyelashes. The sense of smell and of taste are much impaired, and in some cases almost abolished; at times there is partial deafness and a sense of obstruction of the internal ear. Deglutition is interfered with, especially when the nostrils are obstructed. The mucous membrane of the mouth, tonsils, and pharynx partakes of the general irritation; the lips are dry, cracked, and swollen. There is frequently to be observed a papular eruption, especially in the scalp, which is attended by more or less itching. Towards the close of the second week irritation of the bronchial mucous membrane is added to the other symptoms, giving rise to a frequent dry cough. After a paroxysm of coughing a small quantity of glairy mucus may be expectorated with slight relief to the disagreeable sensations in the throat. At this stage asthmatic symptoms occasionally appear, these, although sometimes severe, are generally not long continued.

At the end of the third week, the catarrhal symptoms diminish, the tickling of the fauces ceases, the condition of the eyes improves, but the cough is apt to continue longer, while the heart's action will be noticed to be easily accelerated by exercise, and the pulse occasionally to intermit. The symptoms then gradually diminish until the occurrence of the first frost, when they generally abruptly disappear, leaving behind them debility and a more or less altered state of the mucous membrane, from which the patient, if in otherwise good health, soon recovers. Together with these local effects of the disease, there is generally present a profound nervous depression, rendering impossible any kind of mental work, especially in the latter part of the day. This is attended by great nervousness at night, and inability to sleep, which, together with irritability by day, is an annoying feature of the affection. In severe cases there is a daily paroxysm of fever, accompanied by headache, intolerance of light, and by

debility compelling the patient to keep his room and even his bed for several days in succession. The tendency to this annually recurring affection of the mucous membrane is at length to cause chronic bronchitis, which may in the end undermine the patient's strength.

These are symptoms which do not differ, except in the time of their occurrence and in the fact that they are not relieved at the sea-coast, from those which are said by Dr. Watson to attend the rose cold in England. We are therefore inclined to think that Dr. Wyman has not succeeded in establishing autumnal catarrh as a distinct disease, although he has certainly drawn our attention to the fact of the very general existence in this country of a disease similar in nature to the rose cold, although its symptoms are generally more severe; showing the same tendency to occur in families and alike rebellious to medicinal treatment. He has also shown that there is a period of summer, from July 10th to August 20th, when there is no tendency to the occurrence of this form of catarrh.

Dr. Wyman next proceeds to demonstrate that the disease does not occur in Great Britain, France, Switzerland, or Germany, and that there are many parts of the United States which are exempt from it. "As at present informed," he says, "we may assume that it is a disease of temperate climates. It does not extend much beyond the shores of the great lakes, certainly not into the cold regions of Canada. Neither is it found in the Southern States; that is, it is confined between the parallels of 37° and 47° north latitudes. But it does not occupy the whole of this region; it is not found in the extreme east of the continent, nor does it extend to the far west." He states that the southern limit probably extends from St. Louis eastward to the capes of Virginia; the Editor of this Journal, however, informs us of a lady and her niece, residents of Savannah, both of whom have suffered from the disease, the former in April, the latter in August.<sup>1</sup> To the sufferers from this disease it will be a gratifi-

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[<sup>1</sup> A very curious circumstance may be mentioned in connection with the former case. When suffering from her annual attack, some years ago, she was invited to visit a friend in New York, but postponed accepting the invitation until her recovery. A few days after her arrival in New York, which was about the 1st of June, the roses there began to bloom, and she had a second attack.

We may further state that two sisters of the second case, married and living in Philadelphia, are sufferers from this affection. The elder has not escaped her August attack for the past thirty-two years, and for the first nine years she was also afflicted with a June attack.

The younger, who suffers from the June affection, has escaped only once in the past twenty years, and on that occasion she was confined to her chamber, and most of the time to her bed, by a violent attack of acute rheumatism. The first time she left her chamber was to obtain some water in an adjoining bath room, when she at once began to sneeze, her eyes to water, and she believed her enemy had seized her. On raising her head she observed on a high window-ledge a number of roses in a tumbler. She at once made a hasty retreat and did not leave her room until July. Whenever this lady smells a rose, watery eyes, sneezing, etc., result; but her sister enjoys much the odour of roses and of new-cut hay, and experiences not the least unpleasant effects therefrom.

From the closest observation of the disease at the two seasons, we have not been able to detect any *essential* difference between them—certainly no greater difference than occurs in the same individual in different attacks, or in different individuals affected at the same season, and we are therefore persuaded that the periodical affections termed rose cold and hay asthma are really identical affections, and that the cause which produces them, whatever it may be, though not precisely the same in every individual, must be of a closely analogous character. EDITOR.]

cation to know that in the region of country exempted from all tendency to this disease are included those parts of the White Mountains in which are situated the Glen, Gorham, Randolph, Jefferson Hill, Whitefield, Bethlehem Village, the Franconia Notch, the White Mountain Notch, and the various mountains within this line. The Catskill Mountains also afford immunity to many, as do also Oakland, in Maryland, and many places of resort in the Green Mountains and in the Adirondacks. All of these places are elevated some hundred feet above the level of the ocean, but mere elevation is not alone sufficient to give protection, as those who have resorted during attacks to the Berkshire Hills of Massachusetts and the elevated plateaus of New York have discovered. This immunity also cannot be explained by the lower temperatures of the places where relief is experienced, for in the case of the White Mountains the temperature is almost identical with that of the homes of some of those who obtain relief there. By residence in this region of immunity, during the time in which autumnal catarrh usually manifests itself, those subject to it escape, and even those fully under the influence of the malady, on arriving, experience sudden and marked relief.

In regard to the causes of autumnal catarrh little appears to be accurately known. From Dr. Wyman's investigations it appears, that, of seventy-nine patients whose histories he was able to collect, fifty-four were men and twenty-five were women; but that this greater liability of the former does not depend simply upon the greater frequency with which they are exposed to the vicissitudes of weather, is shown by the fact that in six cases only out of the fifty-four would the nature of the occupation or profession of the patient justify the opinion that it had had anything to do with predisposing him to the disease. It appears to belong to the early and middle period of life. Thus, of seventy-nine cases in which the age is given, it is said to have begun in fifty-nine before the patient had reached forty years of age, and in only two after he had passed fifty. There is, as has already been intimated, a marked predisposition in certain families to this disease, as the following will show. "Of seventy-seven cases recorded in our table, in fifteen (one-fifth) more than one member of the same family is also affected—a much larger proportion than exists in the community generally." In what this predisposition consists it is at present impossible to say. Those who are susceptible to its causes do not manifest at other seasons of the year a greater liability to ordinary colds than other persons. Indeed, they often boast that their annually recurring catarrh secures them from attacks of other diseases, and it is certain that it does not always prevent them from attaining an advanced age.

In regard to the pathology of the disease, the author says: "The suddenness with which the access commences, the violence and rapidity with which it invades different parts, the redness of the conjunctiva, the injection of its vessels, the profuse lachrymation, the itching, the irritation of the nostrils, copious secretion and sniffing, the irritative spasmodic cough, more like whooping-cough than bronchitis; the sudden spasmodic asthma, the itching of the skin, and the speedy disappearance of all these symptoms, without the usual signs of inflammation, certainly correspond better with what we know of derangements of the nervous system than with those of the mucous membrane, or the organs by which it is invested." He adds in a note that any one acquainted with the investigations of Claude Bernard upon the vaso-motor nerves will readily admit that a parallel might be drawn between the symptoms of autumnal catarrh and the effects of the experiments of this eminent pathologist on the great sympathetic. The view that the disease is essentially

nervous in its origin is, we believe, generally held by pathologists, although "hay asthma" is, for the sake of convenience, almost universally discussed by systematic writers under the head of diseases of the respiratory organs.

The exciting causes of autumnal catarrh are numerous, among them may be mentioned dust and smoke, especially when caused by a railway train, the dust from straw and hay, strong light, as, for example, sunshine falling upon the face, high winds, fruit of various kinds, the stalks and flowers of potatoes, the perfume of flowers, etc. The very general impression that the Roman wormwood is the cause of the whole disease led the author to experiment with it. It flowers in the open air about the middle of August, or a little later, and continues to bloom until late in September; it is covered with a large quantity of a fine pollen, which is constantly shed during the flowering season, and which is capable of exciting a paroxysm in a very large number of persons. The plant also grows luxuriantly in regions where the disease occurs, and only sparingly in mountainous countries.

The experiments of Dr. Wyman show that the Roman wormwood is at least an active exciting cause of autumnal catarrh, and are as follows. Early in September, 1870, he gathered some of the plant in full flower and covered with pollen, and carried it to the White Mountain Glen, where it was kept until September 23d. The parcel was then opened and freely sniffed by himself and son, who, together with his uncle, Professor Jeffries Wyman, has the same predisposition as the author. The characteristic symptoms were produced in each case. The Professor, who, although of the party, did not sniff the plant, escaped entirely. A portion of the same plant was sent to a friend at the Waumbeec House, Jefferson Hill, which seems to be a favourite resort of the sufferers from this disease, and the following is the account which he gives of its effects. "Eight persons sniffed the plant. One was seized with asthma and stricture in the chest, and did not entirely recover from the effects until the next day. This person is severely affected with asthma, and particularly sensitive. One was affected with catarrh, as he would have been at the same period at home, and the eyes were irritated for several hours; one had sneezing and coughing for some little time; two had sneezing only. One had sneezing and watering of the eyes; one had only irritation of the eyes for some time; one experienced no effects whatever; eight other persons were in the house at the time who are subjects of the disease, they did not sniff the plant, and were not similarly affected." Other experiments seem to prove that the plant has no special irritating properties, except during the autumn.

It is hardly necessary to discuss the diagnosis of autumnal catarrh. If the attack be fully formed, there is scarcely any danger of mistaking it for any other malady. The author says that the following questions answered affirmatively will usually determine the diagnosis.

1. Has the patient had several similar attacks?
2. Have they occurred annually at the critical period: August 15—September 25?
3. Have they ceased, or been relieved, by change of climate?

The disease is unfortunately very little under the influence of medicines, and a removal of the patient to a non-catarrhal region, which he should not leave until after the occurrence of frost, seems to be the only remedy which is successful at all its stages. Patients who are not able to go so far from home will find the city more comfortable than the country; they should avoid dust and the vicinity of plants known to produce a paroxysm, and sleep in rooms with closed windows so as to prevent currents of air. The application of a solution of quinia to the nostrils has not appeared to the author to be of any service,



but the medicine may be administered with advantage internally in two grain doses twice daily. Arsenic, in the form of Fowler's solution, has also evidence in its favour. During the asthmatic stage, the smoking of stramonium leaves has been most successful, and so has that of the Esbic cigarette.<sup>1</sup> The inhalation of sulphuric ether and chloroform give relief to some, but care should be taken not to render the patient insensible. Annoying symptoms may frequently be relieved by palliative measures, such as would naturally suggest themselves to any intelligent physician.

The histories of the cases with which the volume closes add very much to its value. These include descriptions of their own attacks by Daniel Webster and by the Rev. Henry Ward Beecher, both of whom have given very graphic accounts of their sufferings.

The book is an exceedingly valuable monograph, and we hope its appearance may be hailed as an evidence that hereafter American physicians intend to devote themselves more frequently than heretofore to the study and description of diseases which are either peculiar to our own country or are affected by its climate. We are sorry, however, that Dr. Wyman has not taken more pains in the composition; there are evidences of careless writing and proof reading, such as we should not have expected from one of his deservedly high reputation. Our notice is not complete if we do not add that the book contains three maps and a tabular view of eighty-one cases of autumnal catarrh.

J. H. H.

ART. XXIII.—*Thermic Fever or Sunstroke*. By H. C. Wood, Jr., M.D., Professor of Medical Botany and Clinical Lecturer on Diseases of Nervous System in the University of Pennsylvania; Physician to the Philadelphia Hospital. The Dissertation to which was awarded the Boylston Prize, June 9, 1872. 16mo. pp. 128. Philadelphia: J. B. Lippincott & Co.

In the preface, referring to his earlier published considerations of sunstroke, the author says: "The fact that my observations were rather derided in certain quarters, long since determined me to make at some time an experimental study of the subject. \* \* \* \* Claiming only that I have endeavoured to find the truth, and asking that my shortcomings may be pardoned, because my work has been honest in its intentions and desires."

The completeness Dr. Wood has given to his task will make his deriders as few and insignificant as his "shortcomings." So they may cease to "molest or make afraid."

The volume before us evidences that the award of the committee was based upon the thorough culture, clinical experience, and careful, laborious research—literary and experimental—which the author has employed in the fulfilment of his work.

The arrangement is into four parts: Part I.—Clinical History; Part II.—Nature; Part III.—Treatment; Part IV.—Sequelæ.

<sup>1</sup> The composition of each cigarette is as follows:—

R. Belladonna leaves	. . . . .	4½ grains.
Hyoscyamus "	. . . . .	2½ "
Stramonium "	. . . . .	2¼ "
Phellandrium aquaticum leaves	. . . . .	¾ "
Opium	. . . . .	½ "

It is Part II. about which will centre the chief interest of the profession. It is quite largely devoted to details of experimentation, some of which have demonstrated facts of paramount pathological importance.

The muscular system first attracted attention, from a prolonged study of which Dr. Wood arrives at the following conclusions:—

"1. Excessive rigidity of heart, due to a coagulation of its myosin, is a very pathognomonic lesion of sunstroke.

"2. That in most cases it is a post-mortem, rather than an ante-mortem phenomenon, occurring directly after death.

"3. In certain cases, the so-called cardiac variety of sunstroke, death is probably due to a sudden ante-mortem coagulation of the cardiac myosin, and, consequently, instantaneous arrest of the heart's action.

"4. That the muscles, after death from heat fever, very soon become rigid, sometimes do so instantly, and that such rigidity is of the same nature as ordinary post-mortem rigidity.

"5. That, while it is conceivably possible that death from asphyxia may occur from coagulation of the myosin of the diaphragm and other respiratory muscles, it is exceedingly probable that in man death never does actually occur from such cause."

His next inquiries were directed to the nerve-centres. A bladder was fitted over the brain of an animal, and a stream of hot water of known temperature passed through the bladder. At the height of the impression the temperature of the brain was ascertained by vivisection. The following was established:—

"First, A temperature of brain from 113° to 117° F. is sufficient, if maintained, to produce death in a short space of time, in mammals, by arrest of respiration.

"Second, That the chief symptoms induced are insensibility and convulsions, preceded by exceedingly rapid respirations and action of the heart, and unaccompanied by any general rise of temperature.

"Third, That these symptoms come on very quickly in all cases, at times with absolute abruptness."

He concludes, "That, if a temperature of 108° F. in the brain of a cat will produce these serious symptoms, it will induce no less in man."

The heat action upon nerve trunks was then tested "by exposing for several inches the sciatic nerve, passing underneath it a strip of rubber cloth, so as to isolate it from the muscles, and pouring water of a known temperature over it. At irregular intervals the conducting power of the nerve was tested by touching it with the poles of an induction battery above the heated portion." He found that the nerves would bear a heat above any occurring in sunstroke.

The results of nerve investigation are thus summed up: "That the nervous symptoms of sunstroke may be, and probably are, due to the direct action of the heat upon the cerebro-spinal axis, and that death itself by asphyxia is often brought about by the same influence."

Lastly, the question of blood-poisoning is disposed of by the fact that the blood of an animal dead from sunstroke has been injected into the veins of a living animal without injury; that the bright colour returns when shaken with oxygen, and "that at a temperature of 113° to 115°F. the amœboid movements of the white corpuscles become more active, and continue so for a greater or less length of time."

Notwithstanding these facts, there are many who will not accept them as final. Even the author occasionally leans back upon his old theory, in the vague expression of "blood deterioration."

As a diagnostic point, he lays stress upon a hot and *dry* state of the skin. The cause of this dryness is arrest of cutaneous transpiration. Cutaneous aeration has ceased, the sudoriferous excretions are retained in the blood, and must

tend to destroy the vitality of that fluid. This is proved by the well-known experiments of Fourcault, Becquerel, and Breschet, where animals varnished over with impermeable coatings died—the blood presenting the same characteristics as that obtained in sunstroke. We have here death from “cutaneous asphyxia,” as it is termed. Whatever technical objections may be urged, it is essentially a poisoning of the blood; and a disorganization of the plasma with destruction of corpuscular movements does not more necessarily follow than in blood poisoning from some extraneous agents. Granting in sunstroke that the heat action upon the peripheral nerve filaments arrests the cutaneous transpiratory process, yet it is the blood—thereby deoxygenized, devitalized—which involves the nervous centres. An increase of body temperature above the normal can only supervene upon a disturbance of the natural chemical forces of the blood, unless the temperature of the surrounding atmosphere is equal to or beyond that of the body. It often happens in sunstroke that the temperature of the atmosphere is considerably below that of the body. It may well be inferred then that the access of body heat comes from chemical changes in the constitution of the blood; in other words, blood poisoning, secondarily affecting the heat centres. Therefore conditions of sunstroke may, and without doubt do present, produced by “blood deterioration” as a “primary” and not “secondary” manifestation. Dr. Wood’s experiments were upon animals, in all of which a fatal result was rapidly induced, death occurring from overwhelming of the cerebral centres. In the absence of more positive disproving evidence, we conclude that disorganization of the blood, more or less complete, may exist, at least in those cases of sunstroke marked by slow progress and by gradual failure of the vital powers.

The production of sunstroke is thus explained :—

“When a man is exposed to heat beyond his powers of resistance, there is a gradual, slow rise of temperature, until the stimulus of the heat becomes so intense as to paralyze either the heat-centre or the vaso-motor nerves, as the case may be, and then there is probably a sudden intensifying of the oxidation processes, and a further rise in temperature, accompanied or followed by an overwhelming of the cerebrum; in other words, intense fever with its accompaniments is developed.”

Dr. Wood is inclined to the belief that fever is due to morbid impressions acting directly upon the nervous system.

The author has added the term thermic fever to the nomenclature of the disease. Heat fever, as suggested by Dr. Geo. B. Wood, it occurs to us, would be preferable. It conveys a direct meaning without mental effort on the part of the reader—an advantage to many individuals which is simply incalculable. In this respect Dr. Wood should have adhered to his motto (*pro bono publico*) rather than old association.

In treatment there is nothing particularly novel. Dr. Wood mainly relies on cold water, although he would not cast aside blisters, hypodermic injections of morphia, and chloroform. He even admits that bleeding may do good by abstracting heat, only claiming that that good is better obtained in other ways.

The fever following upon sunstroke is regarded as of the same nature as meningitis, and the line of treatment laid down in this affection is to be followed.

In conclusion, we would add that this little book is the fullest exposition of the subject in its exact scope anywhere extant, and it should be sought for in all quarters where sunstroke prevails.

A. B. I.

ART. XXIV.—*Saint Thomas's Hospital Reports*. New Series. Edited by Dr. BRISTOWE, Dr. STONE, and Mr. CROFT. Vol. ii., 8vo., pp. x., 381. London: J. & A. Churchill, 1871.

We shall first invite attention to the medical papers in this volume. These are rather more numerous than the surgical, and some of them are scarcely of as practical a character as is desirable in a volume of Hospital Reports. We are glad to see, however, that the editors are determined that the series, of which this volume is a part, shall not only be continuous but valuable, for even those papers to which we have alluded as not of a practical character show great care in their preparation. Dr. Peacock's communication is of course valuable, and to Dr. Evans belongs the merit of having contributed a paper which not only gives us a good deal of information, but will do much towards causing the recognition of the fact that thoracentesis is not merely a justifiable operation, but one which in many cases a due sense of his obligation to his patient will compel a conscientious physician to perform.

Art. I. *An account of some Experiments relating to the Influence Exercised by Colloids upon the Forms of Inorganic Matter*. By WILLIAM M. ORD, M.B., London.—Mr. Ord contributed a paper to the first volume of these Reports, entitled "Some experiments relating to the forms assumed by uric acid," which was noticed in the April number of this Journal for 1871, and in which he showed very clearly that the crystalline forms assumed by uric acid in the urine have a definite relation to the composition of that fluid. In the present communication he demonstrates equally clearly that colloids have a decided influence in controlling crystallizing force, and that albumen is much more active, in this respect, than gelatine. The paper will be found of interest to those who are especially engaged in this kind of investigation, but does not very readily admit of analysis.

Art. II. *On the Period of Incubation of Typhus, Relapsing Fever, and Enteric Fever*. By CHARLES MURCHISON, M.D., Edin., F.R.S.—Dr. Murchison tells us that throughout the period of his active connection with the London Fever Hospital, he was on the constant lookout for cases calculated to throw light upon the subject of this memoir, and that in it he has placed on record all such cases he encountered among upwards of ten thousand patients suffering from the continued fevers, who have been under his immediate care. The paper is a long one, and we shall, therefore, give only his conclusions, which are as follows: "The period of incubation of typhus varies in duration in different cases. In a large proportion of cases it is about twelve days. In exceptional cases it is longer than twelve days, but it rarely, if ever, exceeds three weeks. In many cases (one third or more) it is less than twelve days, and occasionally there is scarcely any latent period, the symptoms commencing almost at the instant of exposure to the poison.

"The period of incubation of relapsing fever is not a fixed period, and is even more variable than that of typhus. It is, on the whole, shorter than that of typhus. Occasionally, as in typhus, there is scarcely any latent period at all, the symptoms commencing almost immediately after the first exposure to the poison.

"The period of incubation of enteric fever is most commonly about two weeks. Instances of a longer duration appear to be more common than in typhus or relapsing fever. The period of incubation is often less than two weeks, and, as in typhus and relapsing fever, it may not exceed one or two days."

Art. IV. *On the Existence of Continued Currents in Fluids.* By GEORGE RAINEY, M.R.C.S.—This communication is a sequel to the paper on the same subject in the first volume of these reports, which was briefly noticed in the April number of this Journal for 1871. Mr. Rainey has been able to simplify the apparatus by which the earlier experiments were performed. The conclusions at which he arrives are very similar to those reached in the former paper, and are as follows: 1st. That the particles of all fluids, irrespective of quantity or form, are always in motion; 2d, that this motion is produced by the combined operation of two forms of attraction, namely, that acting at apparent contact, and that acting at all sensible distances; 3d, that the movements of the particles in these distances, though modified by temperature, are not caused by it; 4th, that the rate of movement of these particles, besides being affected by certain physical properties of the fluid, such as that of density, of tenacity, etc., is influenced also by the form in which they are aggregated; as for instance, if the form be that of a sphere, all the particles, being directed towards one centre, will move more rapidly than if the same particles are extended over a larger space, and consequently be directed to several centres at the same time.

Art. V. *On Paracentesis Thoracis.* A Thesis read for the Degree of M. D. Cantab. By G. H. EVANS, M.D., M.R.C.P.—After giving a very full *résumé* of the history of this operation, Dr. Evans proceeds to state his reasons for believing it to be expedient to remove the fluid from the chest as early as possible in cases of pleuritic effusion, and for thinking that paracentesis thoracis is the best and safest way of accomplishing this. In the first place, pleuritic effusion may of itself cause fatal results, which could have been prevented by the early abstraction of the fluid, and to show this he reports a case in which the sudden death of the patient could be attributed to no other cause, and refers to numerous cases of a similar character recorded by Trousdale, Cruviellier, Chomel, Aran, and others. Secondly. The long continued compression of one lung by pleuritic effusion predisposes to acute and chronic diseases, tubercular or otherwise, of the lung of the other side, simply because an overworked lung, like an overworked man, is placed in an unfavorable condition for resisting noxious influences to which it may be exposed. Of course, with one lung useless, the patient's chances of recovery are slight when diseases attack the other. Thirdly. The lung which has been long compressed by pleuritic effusion is rendered thereby incapable of re-expanding, not only in consequence of the formation of firm adhesions between the pulmonary and costal layers of pleura, and the thickening of the pulmonary pleura by the deposition of lymph, but also, Dr. Evans believes, because of the tendency to the stagnation and subsequent coagulation of the blood in the pulmonary artery which exists in cases of compression of the lung by pleuritic effusion.

The objections which have been made to the operation of paracentesis thoracis may be stated to be as follows: (a) the danger of death from syncope during or immediately after the operation; (b) the operation itself setting up suppurative inflammation; (c) the probability of the admission of air, and consequent suppurative inflammation; (d) the possibility of hemorrhage from the operation. In regard to the first objection, the author shows that out of a total number of 820 cases, in only two is it recorded that death was in any way the result of the operation; in one of these death was caused by hemorrhage from wounding small arteries by the puncture; in the other, it took place the next day, and was attributed to the shock of the operation. In none is there any mention made of the fatal syncope which has been supposed to be likely to ensue upon the sudden removal of a large pleuritic effusion. The belief that the operation itself has a tendency to cause fresh inflammation, especially if air

be admitted, seems also to have very little foundation in fact. He does not himself believe that the admission of air into the pleural cavity is followed by an aggravation of the symptoms; but, even if it were, he sees no force in the objection, since the operation may be performed in such a way as effectually to exclude air. In twenty-eight cases, which he tabulated, the operation was performed more than once; in twenty-four of these the fluid drawn off was serum each time; in the remaining four cases it was purulent in one or more of the subsequent tapplings. The probability of hemorrhage from the operation, alluded to by Dr. Addison, is best combated by a reference to the case mentioned above, as being the only one in 820 in which it occurred, and then it was said to be due to an abnormal arrangement of small anastomosing vessels.

In addition to relieving the patient at once of distress and dyspnoea, and freeing him from the danger of sudden death, the operation places him at once in a more favourable condition for the absorption of the remaining fluid, which is very well shown in one of the cases reported by the author. In this case the patient passed two gallons of urine during the twenty-four hours immediately succeeding the operation.

The tables which accompany the paper show very clearly the advantage of performing the operation early in the disease. Thus, out of a total of 533 cases, 373 recovered, 153 died, and in 7 the result is doubtful; this makes the rate of mortality 29 per cent. But out of a total of 308 cases, in which the effused fluid was serum, 74 died, making the rate of mortality 24 to 26 per cent. In 24 cases of serous effusion, in which the operation was performed not later than the end of the fourth week, 21 recovered and 3 died; in one of the three fatal cases there was disease of the liver, and in the other two the operation was performed as a last resource, merely with the view of prolonging life. In 17 cases where the operation was performed after the first month, but not after the second, 13 recovered and 4 died; one of these latter died two years afterwards from phthisis. In 10 cases where it was after the second month but not after the fourth, 5 recovered and 5 died. In 8 cases, where the effusion was of more than four months' duration, 3 recovered and 5 died.

Dr. Evans prefers to operate according to the plan proposed by Reybarb and adopted by Trousseau, which consists in tying a flap of moistened gold-beater's skin round the mouth of the canula so as to form a valve or curtain which admits of the air passing freely out, but prevents it from making its way in.

Art. VII. *On the Action and Use of the Opium Alkaloids, Cryptopia and Thebaia.* By JOHN HARLEY, M.D., London.—Dr. Harley has already published some observations on the physiological action of cryptopia, but, having been enabled, by the kindness of the discoverers of the alkaloids, to prosecute his inquiries further, he gives us in this paper the results of his experiments with it on the dog, the cat, the rabbit, and on man. He believes that cryptopia, in its effects on the nervous system, stands exactly midway between morphia and thebaia, sharing equally in the qualities of both. "We have," he says, "applied the test of different nervous systems to the substance, and found that those of the mouse, of some dogs, and of man, give sleep, while those of other dogs, of the cat, and of the rabbit, give convulsion. A grand physiological truth lies here, for surely these experiments teach us that sleep and convulsion are but one, mutually and readily interchangeable, the variation being determined by certain peculiarities resulting from mechanical or molecular variations of the nervous system; in a word, the one test gives us white light, the other a coloured spectrum."

In regard to the excitant action of cryptopia as compared with that of the-

bain, he says the broad distinction between the two alkaloids is this, that the convulsion of thebain is a *persistent spasm*, and that of cryptopia an *intermittent* one. Thebain holds the muscles with the most inflexible vigour, and the stiffened and motionless body may be held straight out by one of the extended hind legs. Cryptopia throws the whole of the voluntary muscular system into rapid and violent vibration. In regard to the difference between the hypnotic and general effects of morphia and cryptopia, the author says the sleep of cryptopia is as prolonged as that of morphia, but it is lighter and consequently more refreshing, and quite free from the illusions which so often attend sleep induced by morphia. But this is not the only advantage which cryptopia possesses over morphia. Cryptopia exercises no deranging influence over the vagus, and its administration either by the stomach or subcutaneously never gives rise to vomiting or to faintness. As an hypnotic it is about one-fourth as powerful as morphia. It is not eliminated to any great extent by the kidneys.

Dr. Harley has found that the hypnotic action of thebain on man is, as far as has been observed, free from all unpleasant effects. As a soporific,  $1\frac{1}{2}$  grains are about equal to one-fourth of a grain of a salt of morphia. The contracting effect on the pupil is, in most cases, much weaker than that of morphia, but it possesses an equally stimulating effect upon the pulse. He has also found that atropia increases and prolongs the hypnotic action of thebain.

Art. IX. *Remarks on the Healthy and Morbid Anatomy of the Perivascular System of the Brain.* By W. W. WAGSTAFFE, F.R.C.S.—After alluding to the history of the discovery of the perivascular system of the brain, Mr. Wagstaffe narrates three cases illustrative of its morbid anatomy. In the first case, tubercular deposits were found scattered freely over the surface of the brain, but the tubercle was always definitely related to the vessels. At the upper surface of the hemispheres, clusters of miliary deposits were arranged along the sides of the larger vessels; in some cases the naked eye could trace small vessels running into single deposits: in a large mass in the Sylvian fissure, the carotid and the middle cerebral arteries were surrounded by the new growth. When a portion of the pia mater was examined microscopically, the relationship of the deposits to the vessels was still more clearly seen; the first thing which attracted attention being the marked distension of the perivascular canals. These, which are often difficult to demonstrate in the meninges in health, were now very distinct, and distinct from being distended with abnormal contents. They contained corpuscles exactly similar to those found in the masses of tubercles. But, besides the diffusion of the elements of tubercles in these perivascular canals, and their great abundance near the masses of the deposit, further evidence was obtained of the relation between them. One of the very small miliary deposits was examined, and found to be situated entirely within the perivascular sheath. The corpuscular bodies which are found within these perivascular sheaths are regarded as lymph-corpuscles, and there is, therefore, every reason to believe that miliary tubercles consist of aggregations of lymph-corpuscles, and in this connection Mr. Wagstaffe says; "I am inclined, then, to trace the source of these tubercle corpuscles to the cells occupying the sheath normally as an epithelium which is intermediate between the spheroidal and tessellated varieties, and would look upon the disease as one of excessive multiplication. Although the elements of ordinary inflammation consist in the main of cells whose appearance is identical with these lymph-elements, we are not justified, I think, in looking upon the tuberculous disease as simple inflammation, or as His suggests, inflammation of the perivascular sheath, for we do not find an alteration in the fibrous part of the sheath wall, or the presence of fibre-cells, until later in the disease, when the primary deposit

has probably acted as a focus of inflammation. Moreover, the peculiarity of the miliary character of the deposits distinguishes tuberculous from ordinary inflammation."

Art. XI. *Cases of Stricture of the Œsophagus.* By E. CLAPTON, M.D., F.R.C.P.—Two cases of stricture of the œsophagus are reported in this paper. In the first case death was probably due to hemorrhage from the left common carotid artery, the cancerous ulceration which originally affected the œsophagus and produced the symptoms of stricture having finally caused a perforation of the artery. In the second case, from the great relief afforded by the passing of bougies, Dr. Clapton was inclined to believe that there existed simply a fibrous thickening at the lower portion of the œsophageal tube.

Art. XII *On Œgophony.* By WM. H. STONE, F.R.C.P.—From experiments which are detailed in this communication, Mr. Stone was led to the following conclusions in regard to the *modus operandi* of ægophony. The layer of fluid in pleurisy stops the larger and coarser vibrations of the ground-tone, but allows the fine and close undulations of the high harmonics to pass. "We thus," he says, "have phenomena in what we may call an ascending scale; beginning with the rough vibration of vocal fremitus, which, like some forms of loud cardiac murmur, is actually sensible to the tactile papillæ of the finger, but which is easily intercepted, through the phenomena of vocal resonance which are more penetrating, up to ægophony, which is thus explained to be vocal resonance divested of its lower fundamental tones by the deadening effect of a layer of more or less inelastic fluid. Therefore, I was led early in the paper to name it a filtration. It is thus not dissimilar in kind from that which, in a transparent medium, like glass, obstructs the undulations of sound and heat, but gives free passage to the finer and more subtle pulsations of light."

Art. XIV. *On Impairment or Loss of Power of Articulate Speech.* By JOHN S. BRISTOWE, M.D., F.R.C.P.—This paper, although well written, and containing the reports of many interesting cases of the various conditions comprised under the term aphasia, does not advance any facts which have not already been considered in former numbers of this Journal, except perhaps the one that Dr. Bristowe is inclined to look upon agraphia as an amnesic rather than an ataxic defect. "The patient," he says, "cannot speak because he has forgotten words, he cannot read, because he has forgotten the precise meaning of letters and their combinations, and he cannot write because he cannot recall to his mind the complex combinations of strokes which represent words."

Art. XV. *On the Prognosis of Valvular Diseases of the Heart.* By THOMAS B. PEACOCK, M.D., F.R.C.P.—Dr. Peacock shows very clearly in this paper that there are other elements which must be taken into consideration, in making a prognosis in valvular diseases of the heart, than the amount of lesion of the valves themselves. The principal sources of danger in this class of affections are three. 1, failure of the muscular power of the heart; 2, congestion of the organs anterior to the seat of obstruction; 3, thrombosis and embolism. These are more prone to occur in some forms of valvular diseases than in others, and they may be variously combined and may ensue at different times in the course of the same case. The following passage will give the results of his experience in a few words: "In reviewing what has been said as to the sources of danger in different forms of valvular disease, it will be seen that incompetency of the valves is regarded as a more serious defect than obstruction; and of the affections of the valves of the left side of the heart, I conceive incompetency of the aortic to be more dangerous than the similar condition of the mitral valves. Not only does incompetency of the aortic valves occasion great impediment to the circulation, and especially cause an imperfect supply of



blood to the brain; but as the power of the left ventricle becomes rapidly exhausted, there is danger at any moment of death by syncope. In the corresponding condition of the mitral valves, though it seriously obstructs the pulmonary circulation and occasions great visceral congestion, death is brought about more slowly as the result of the imperfect aeration of the blood and its impure condition from the state of the parenchymatous viscera, and by dropsical effusions, as sudden death is less likely to occur. As regards obstructive disease of the two sets of valves, I should reverse the order in which they are regarded as serious, obstructive disease of the mitral being apparently a more important defect than the same affection of the aortic valves. In the former condition the combined power of the left auricle and right ventricle is unable adequately to propel the blood through the left auriculo-ventricular aperture, and hence the lungs and other organs soon become very greatly engorged; while in cases of aortic constriction the left ventricle long resists the impediment, and it is only when the obstruction has become extreme, and the power of the ventricle is impaired, that the more distant organs are involved."

Conditions, other than those already mentioned, which are not without influence on the duration of the patient's life are, 1, the number of valves diseased; 2, the nature of the complications, and 3, the circumstances of the individual.

Dr. Peacock also calls attention to the fact that the intensity of the murmur is by no means the measure of the amount of disease. "For the production of a murmur," he says, "two elements are necessary; there must be a source of obstruction to the circulation, and the blood must be propelled with power through such impediment." Hence, for instance, in cases of general bronchitis accompanied by great embarrassment of the circulation, the heart action may be so feeble as not to give rise to a murmur, which, however, will be distinctly heard when under the influence of rest, a genial temperature, and suitable treatment, the bronchitic symptoms have subsided and the action of the heart has become stronger and more regular.

Art. XVIII. *On Hypertrophic Polypus of the Os Uteri, and its relation to Hypertrophy of the Cervix Uteri.* By ROBERT BARNES, M.D.—Dr. Barnes, after speaking of the fact of the frequent coincidence of small polypi springing from the edge of the os uteri, with hypertrophy and prolapsus of the cervix uteri, which has led to the conjecture either that a common cause produces both, or that one entails the other, says that the truth appears to be that the excessive growth which results in hypertrophy, sometimes also produces polypi as well. The pathological history of "hypertrophic polypi" may be told as follows: The first condition of their existence is hypertrophy of the cervix uteri. Frequently the os uteri being lobulated or fissured, as is also seen after labour, one lobe or portion of a lip may take on an exaggerated growth, and project beyond the level of the os. "In such a case," he says, "if studied by the light of observation of more advanced or completed polypoid formation, we may see the origin of the hypertrophic polypus. A small lobe, more or less marked out on the os by a fissure or depression on either side, continues to grow under the same stimulus that determines the general hypertrophy of the cervix. It grows a little more quickly; then its base, being compressed by the firm structure of the os on either side of it, is squeezed and elongated until it assumes the characteristic polypoid shape."

In regard to the treatment of these polypi, he says they should be removed with the scissors. The bleeding which is apt to follow this operation should be checked by hemostatics, the precaution being taken to keep the patient in bed for two or three days afterwards, if there is much hypertrophic extension of the cervix uteri. After the inflammation excited by the operation has sub-

sided, a free slough of the most hypertrophic lip should be wrought by applying potassa cum calce, or the actual cautery in a line across the lip. The healing of this slough induces altered nutrition of the part, promotes absorption, and the contraction following, being inwards, or centripetal, acts in direct antagonism to the morbid hypertrophic extension.

*Report of the Obstetrical Department.* By HENRY GERVIS, M.D., London.—From this report it appears that 1250 children were born in the obstetrical wards of St. Thomas's Hospital between December 6, 1869, and December 6, 1870. Of this number 1206 were born alive, and 44 were stillborn, or 3.5 per cent. Eighteen women were delivered of twins. Of the 1232 cases attended, 150 were first labours; 169, second; 170, third; 176, fourth; 149, fifth; 110, sixth; 102, seventh; 67, eighth; 58, ninth; 32, tenth; 14, eleventh; 13, twelfth; 10, thirteenth; 2, fourteenth, and 1 was a seventeenth labour. Of the 1250 children born, the following specifies the presentation: vertex, 1212; breech, 23; footling, 5; arm, 2; face, 5; brow, 3.

The usual table of diseases treated at the hospital, during the year, is appended to the volume. J. H. H.

We shall now invite our readers' attention to those papers which are particularly interesting to surgeons, and in the first place to

Art. III. *Some Remarks on Gunshot Wounds of the Lower Extremity.* By WILLIAM MAC CORMAC, F.R.C.S.—Mr. Mac Cormac's name is already familiar to the readers of this Journal through bibliographical notices of several surgical pamphlets, which he published while connected with the General Hospital at Belfast, and more recently through notices of his well-known volume, "Notes and Recollections of an Ambulance Surgeon," which was founded on the author's large experience during the recent Franco-Prussian war. The present paper is characterized by the same philosophic and eminently practical tone which marked Mr. Mac Cormac's previous writings, and may be studied with advantage by both civil and military surgeons. With regard to the treatment of gunshot fractures of the femur, the author says:—

"The first examination should be the only one, and must determine whether an attempt shall be made to preserve the extremity. After that the less handling or interference of any kind the better. Stromeyer urges that our first care should be to endeavour to save the life of the patient with fracture of the thigh, and afterwards, if possible, to rectify the deformity. . . . There can be little doubt, that violent continuous extension of a bullet-smashed femur, combined with frequent handling and re-adjustment, must prove injurious in the extreme. Stromeyer has almost completely abandoned forcible extension and counter-extension, and prefers simply to lay the limb on the side, in the position advocated by Pott. In my own practice I employed long splints sometimes, sometimes sand bags, with a small weight merely to steady the limb attached to the foot. In two instances that I know of, subsequent deformity was successfully relieved by refracturing the bone. . . . When amputation is considered necessary in these cases, let it be done at once, during the first twenty-four hours. . . . A very interesting question is raised by Stromeyer in respect of amputations, namely, that we need not amputate clear of the diseased or injured soft tissues in ordinary cases, but may divide the bone, unless split up and inflamed, just at the seat of fracture. The track of a ball or a sinus may safely be left in the flap, and the high division of the bone, which so largely increases the risk, is thus obviated. . . . The considerations detailed in this paper appear to me to afford ground for concluding against the universal application of amputation in regard of gunshot fractures of the shaft of the femur. Sound, though it may be delayed, union will often follow conservative treatment. I think for general guidance we may for the present declare that, in fractures of the lower half of the femur, the rule should be when in doubt to amputate, while in those of the

upper half of the bone the converse should apply, namely, when in doubt to try to preserve the limb."

Mr. Mac Cormac's paper is illustrated with two plates, which appear to have been executed by what is known as the "heliotype" process.

Art. VI. *On the Therapeutical Importance of Recent Views of the Nature and Structure of Cancer.* By HERBY ARNOTT, F.R.C.S.—This paper is one of great interest and value, and its conclusions carry with them a great deal of authority, on account of the author's large practical experience in the cancer wards of the Middlesex Hospital. Referring to the diversity of opinion which prevails among medical men as to the advantages to be derived from operations in cases of cancer, Mr. Arnott remarks, "that the majority of operating surgeons are strongly in favour of the knife, whilst the majority of physicians and surgeons, little used to operations, declaim against this remedy." The fact is we believe correctly stated, but we are loth to accept Mr. Arnott's explanation, that "personal prejudice" influences either party's judgment in the matter; we believe the true explanation is to be found in the different nature of the operator's and of the non-operating medical man's experience; the former has often the opportunity of seeing the advantages derived from early interference, while the latter, regarding an operation as a forlorn hope not to be resorted to as long as it can be avoided, necessarily sees the operation performed under less favourable circumstances, and forms a less favourable opinion of the benefits which it is capable of conferring. In discussing the oft-mooted question of the local or constitutional origin of cancer, Mr. Arnott considers with great fairness the various facts and arguments which have been advanced on either side, and states his conclusions in the following language:—

"A calm survey of the two opposite views of the nature of cancer, and of the facts which are adduced in support of them, seems to leave us in about this position: that, while it is impossible absolutely to deny the existence of a special dyscrasia as the cause of the appearance of malignant tumours, the evidence in its favour will not bear careful scrutiny, although it may be admitted that certain individuals and even families exhibit a remarkable predisposition to the occurrence of these growths, just as a similar predisposition may be shown to the appearance of fatty growths, warts, or other such local defects of nutrition; that owing to appreciable physical causes—as the special arrangement of structural elements, the part of the body attacked, etc.—certain tumours are more prone to malignancy than others; that whether the original growth be absolutely local or depending on general changes in the system, a stage may be at length reached in which there may be, indeed, an ineradicable and necessarily fatal blood contamination; and, finally, that as all the real evidence before us goes to prove that it is in any case the *local tumours or ulcers which kill*—either by invasion of vital organs, or by the breaking up of health caused by excessive exhausting and fetid discharge from the primary seat—should be completely removed when possible."

Art. VIII. *Description of a Case of Unreduced Dislocation of the left Femur, in which Death occurred Eight Days after the Receipt of the Injury.* By WILLIAM MAC CORMAC, F.R.C.S.—It is so seldom that the surgeon has an opportunity of dissecting the parts concerned in an unreduced recent dislocation of the hip, that Mr. Mac Cormac's description of the appearances observed in the instance here narrated is of much interest. The dislocation in the case given was backwards, the head of the bone (as shown by a well executed wood-cut) lying just behind the acetabulum, with the pyriformis and gluteus minimus muscles above, and the obturator internus and torn gemellus muscles immediately below. After quoting the views of our distinguished

fellow-countryman, Prof. Bigelow, as to the mechanism of hip dislocations, Mr. Mac Cormac adds:—

“A careful examination of my own specimen confirms in a remarkable manner most of these statements. After dissection the deformity was persistent and identical with that existing during life. The dislocating force had been applied when the thigh was flexed at right angles, and the bone was driven directly backward between the pyriformis and obturator internus muscles. The locking or rigid condition of the limb was very evident, while the rent in the capsule was limited to its posterior part. Manipulation after the manner described by Bigelow appeared in the dissected specimen to be the way in which the head of the bone might most readily be returned to the socket.”

Art. X. *Remarks on the Theory and Practice of Epidermic Grafting.* By WILLIAM ANDERSON, F.R.C.S.—In this paper Mr. Anderson, who is the Surgical Registrar of St. Thomas's Hospital, gives an interesting account of the experience at that institution of M. Reverdin's method. In the following sentences, the writer, it seems to us, estimates very justly the advantages and disadvantages of the new process as compared with ordinary plastic operations; in the latter,

“we cover in a freshly exposed surface with a portion of integument in its entire thickness, usually commensurate in size with the area prepared for its reception, and retaining a connection with adjacent parts by means of a vascular isthmus. Such a covering possesses, of course, all the natural advantages with the minute structure of true skin, but the material employed for filling up the one gap has been gained by making another. . . . On the other hand, epidermic grafting, after the manner of M. Reverdin, has the recommendation that the amount of tissue required for the process is small, the operation simple and without risk, and, more particularly, that a failure is in no degree serious; but it must be borne in mind that the best result attainable is the production of a sound cicatrix, often, it is true, stronger and more pliant than the ordinary cicatrix of a large slowly healing sore, but still possessing the main imperfections of such a texture.”

Art. XIII. *Cases of Inversion of the Bladder.* By JOHN CROFT, F.R.C.S.—The great rarity of the occurrence of inversion of the bladder may be inferred from the fact that Mr. Croft's case is but the fourth which has been recorded. The affection is exclusively met with in female infants, and Mr. Croft's patient (aged 14 months), was the youngest of the four whose histories have been published. This case is also remarkable on account of the occurrence of rupture of the inverted viscus (as shown by the escape of a clear, straw-coloured, *non-urinous fluid*), an accident which did not, however, entail any unfavourable consequences after the reduction of the protruded organ. In order to add to the interest of his paper, which is one of great value, Mr. Croft annexes abstracts of the three cases previously observed by Dr. Murphy, Mr. Crosse, and Dr. Lowe respectively.

Art. XVI. *On a New Method for Extraction of Cataract.* By R. LIEBREICH, M.R.C.S.—This paper contains the best account which we have as yet seen of Mr. Liebreich's new operation, of which we shall now endeavour to give our readers a description, using, as far as possible, the author's own words. The distinctive peculiarities of Mr. Liebreich's method are, that the section is made in a downward direction, and lies entirely (except the points of puncture and counter-puncture) within the cornea, and that there is no iridectomy. The instruments employed are a very small Graefe's knife, a cystotome, and a common Daviel's spoon, all of which may be combined in a single handle. The patient is placed on his back, the pupil having been previously dilated with atropia, and chloroform may be administered if necessary; the surgeon stands

behind the patient's head to operate on the right eye, and at his left side to operate on the left eye.

"Supposing the right eye is to be operated upon. In that case the operator takes hold of the upper eyelid with the index finger of his left hand, whilst he slightly presses the middle finger against the inner canthus of the eye. The knife held in the right hand with its back horizontal and backwards, the plane of the blade making with the horizontal meridian of the eye an angle of about  $45^{\circ}$ , enters the sclerotic with its point about one millimetre externally to the margin of the cornea. . . . Without altering the direction, the knife passes through the anterior chamber in order to make the contra-puncture on the opposite side, so that the point of the knife becomes visible in the sclerotic, about one millimetre (or less) distant from the cornea. The knife is now pushed forwards, so that its retraction finishes the incision. As soon as the incision is made, the eyelid is to be dropped.

"The second part of the operation consists in the careful opening of the capsule.

"In the third part, Daviel's spoon is slightly pressed against the inferior margin of the cornea, and the index finger of the left hand, which holds the upper eyelid, through it exerts a very slight pressure on the highest point of the cornea. Thus the lens is made to rotate a little, its lower margin presses in the manner already described against the posterior surface of the iris, pushes the iris forward, passes along it to the margin of the pupil, overcomes the obstacle and places itself freely in the wound, which is made to gape by Daviel's spoon pressing against it. A slight pressing movement of the index finger of the left hand, by means of which the upper eyelid is shifted from above downwards over the cornea, serves to expel the lens. Similar movements of the lids are employed for the purpose of forcing out any *débris* of the cortical substance, after pushing them from behind the iris towards the pupil, by gently rubbing the shut eyelids. Should the pupil then not appear round, but its margin drawn towards the wound, it regains its normal position by an outward shifting of the lower lid; or, if that be not sufficient, by the introduction of Daviel's spoon."

The after-treatment consists in the instillation of atropia, and the application of a compressing bandage.

Art. XVII. *On Cleft Palate*. By FRANCIS MASON, F.R.C.S.—Mr. Mason, in this short but practical paper, refers to the well-known fact that in many cases, though staphyloraphy may succeed as an operation, it yet fails in obtaining the desired improvement in the patient's voice. This is of course due to the circumstance that a fissured palate is not a mere slit or rent, but an absolute want of substance in the part, and that hence the approximation of the edges of the cleft converts the soft palate into a curtain, which is tightly stretched across the fauces, and which leaves a space behind, through which air enters the posterior nares and gives rise to the peculiar guttural sound of the voice so often observed in these cases.

In order to obviate this defect, Mr. Mason performs a supplementary operation three or four weeks after the successful closure of the palatal fissure:—

"A narrow spatula is first passed behind the soft palate, partly to steady it, and partly to draw it forward. A sharp-pointed bistoury is then made to transfix the soft palate at the inner edge of the hamular process, . . . first striking against and then being carried by the side of and beyond the spatula. An incision is made, . . . severing the attachments of the palate to the side of the fauces, together with the anterior and posterior pillars, dividing in its course chiefly the tensor palati, and palato-glossus, and palato-pharyngeus muscles. After the incision is completed, the palate retracts by muscular action. . . . The proceeding is repeated on the opposite side, and thus the palate is converted into a loose, movable curtain, somewhat resembling the uvula on a large scale, which in favourable cases effectually shuts off the communication between the posterior nares and the cavity of the mouth. Thus the passage of air is dimin-

ished, if not entirely prevented from passing upwards towards the nose during the act of speaking. The last step of the operation consists of introducing with a needle one or two stitches, from before backwards, through the sides of the flap, hemming the mucous membrane, as it were, . . . to prevent adhesion between the cut surfaces."

Mr. Mason has employed this operation in eleven cases, always with some, and often with very marked, benefit to the patient.

Art. XIX. *Contribution towards the Surgical Treatment of Diseased Joints.* By SYDNEY JONES, F.R.C.S., M.B., etc.—This paper may be regarded as a continuation of that published under the same title by the author, in the first volume of the Reports.<sup>1</sup> Five cases of excision are detailed, viz., four of the knee, and one (by Lister's method) of the wrist-joint. One of the knee cases terminated fatally, but the other three, and the case of wrist-joint excision, resulted in the preservation of very useful limbs. Mr. Jones promises to record, in the next volume of the Reports, a number of cases of excision occurring in young subjects. This interesting paper is illustrated with two excellent lithographic plates.

The volume terminates with the customary carefully compiled medical and surgical statistical tables, and with a short account of "The Old Students' Gift" to the hospital which gave them their education, this gift consisting in finely executed busts of one of the early surgeons and one of the early physicians of the hospital, the illustrious Cheselden, and the no less illustrious Mead. Excellent heliotypes of these busts accompany the volume, the portrait of Cheselden serving as a frontispiece, and that of Mead being inserted among the closing pages of the book.

In laying down the second volume of the new series of St. Thomas's Hospital Reports, we remark with pleasure that its list of contributors now embraces a very large proportion of the medical officers of the Hospital, there being indeed but two or three whose experience during the current year appears to have furnished nothing worthy of publication; on the other hand, there are fewer papers than in the first volume by gentlemen unconnected with St. Thomas's, so that the Reports are more closely approaching to what should be their distinctive character, as emanating from a Hospital Staff.

J. A., JR.

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Art. XXV.—*Transactions of the Medical Society of the State of New York for the Year 1870.* 8vo. pp. 429. Albany, 1870.

THIS handsome volume contains, in addition to a record of the Society's proceedings at its sixty-third annual meeting, and the various lists of officers, honorary and permanent members, etc., several papers of more or less scientific interest, to the more important of which we now intend to invite our readers' attention.

The "President's Address," by JAMES P. WHITE, M.D., of Buffalo, has for its subject *Progress in Medicine*, and succinctly enumerates and comments upon some of the most noteworthy improvements in the healing art which have been introduced during the last forty years.

The next article is a "Case of luxation of the tendons of the posterior tibial and peroneal muscles of both legs, from stretching or rupture of the annular

<sup>1</sup> See number of this Journal for April, 1871, p. 528.

ligaments, by descending a monument with *high-heeled boots*," by LEWIS A. SAYRE, M.D., Prof. of Orthopædic Surgery, Bellevue Hospital Medical College, etc. This case is certainly a very remarkable one: the patient, a damsel of 19, who from the accompanying illustration appears to have been the possessor of a very neat foot and ankle, met with the accident described while descending the Groton Monument, in Connecticut, about four months before coming under Prof. Sayre's observation. She then could not take a single step, but fell instantly, her lower limbs doubling up under her, whenever she attempted to walk. By an ingenious application of adhesive strips, with India-rubber bands, to keep the dislocated tendons in place and to supplement the action of the affected muscles, Prof. Sayre succeeded in affording her instant relief, and in eventually obtaining a perfect cure.

The epidemic of high heels appears to have prevailed in a more virulent form in New York than in our own quiet city; at least we have never seen here "ladies compelled to go down stairs backwards" for fear of falling, as Prof. Sayre tells us they are in New York, where, he adds, "you can see them every day descending the stoops of our fashionable residences in this manner, making a pretense of talking to some imaginary person in the front door as an excuse to hide their awkward movements."

Dr. WM. J. ORTON, in Art. IV., advances the theory that the cause of tuberculosis is the presence of an excess of phosphorus in the system, and recommends the elimination of the morbid element by giving the patient plenty of fresh air, and by the administration of cod-liver oil and iodine, while such portions as cannot be eliminated are to be neutralized *in situ* by the inhalation of the vapour of turpentine.

"Fractured clavicle" is the subject of Art. V., the author being Dr. E. M. MOORE, of Rochester. The mode of treatment recommended is the application of a broad bandage or shawl, forming figure-of-8 turns around the sound shoulder, and the elbow of the affected side, so as to make tense the clavicular fibres of the pectoralis major muscle, the management of which fibres the author looks upon as "the key to the solution of the difficulty that has thus far hung around the treatment of this fracture." Our readers will find a description with an illustration of Prof. Moore's method (which is essentially the same as that of Prof. Sayre) in the last edition of Hamilton's "Fractures and Dislocations;" but that the last-named writer does not regard the plan in question as the great discovery that its author evidently believes it to be, may be inferred from the fact that, in his more recently published "Principles and Practice of Surgery," Prof. Hamilton ignores Dr. Moore's method altogether.

Art. VI. is an "Address delivered before the Chemung County Medical Society, at Elmira," by its President, Dr. T. H. SQUIRE, and contains a suggestion which we would respectfully commend to the attention of those gentlemen who are understood to be engaged in revising our Philadelphia "Fee Bill;" this is, that, as an *untreated* fracture is likely to leave as imperfect a limb as a fracture which is *unskillfully* treated, and as juries are apt to award exemplary damages to the victim of unskillful treatment, "it is, therefore, not unfair to estimate the value of the skillful surgeon's services, in the case of a broken limb, at from five to ten thousand dollars."

Art. VII. is upon "the endoscope, considered particularly in reference to diseases of the female bladder and urethra," and is contributed by ROBERT NEWMAN, M.D., of New York. The author describes some modifications which he has made in the original instrument of Desormeaux, and gives details of several cases of hæmaturia, cystitis, and urethritis, which he has successfully treated.

"The big *nævus*" is the somewhat startling title of Article VIII., which is from the pen of GEO. H. HUBBARD, M.D. The *nævus* in question measured twelve inches in its long diameter by eight inches transversely, and "appeared to be about two inches deep at the most prominent part." Injections of persulphate of iron and applications of the actual cautery had been already used by "an eminent surgeon of the city of Troy," with the sole effect of "causing several deep ulcerating holes, from which issued a horribly offensive discharge." Dr. Hubbard removed the tumour by means of the ligature, and the resulting wound contracted, until there remained only "an unhealed surface near the lower right-hand corner, less in size than a half dollar," when an abscess formed beneath the *latissimus dorsi* muscle, and the wound re-ulcerated and assumed a fungous character, the patient ultimately dying from exhaustion and repeated hemorrhages twenty months after the date of operation. It appears to us that Dr. Hubbard's case may not improbably have been an instance of the super-vention of cancerous upon previously existing *nævroid* disease, an event the occasional occurrence of which is referred to by Paget and other writers on Surgical Pathology.

Art. IX., "Malignant tumours of the abdomen," by FREDERICK HYDE, M.D., presents no points which seem to us to call for special comment, while Art. X., "Lithotomy and lithotritry, etc.," by GURDON BUCK, M.D., has, in the form of a pamphlet reprint, been already noticed in these pages. (See number for July, 1872, p. 237.)

Art. XI., "Cases of chorea," by WM. C. WEY, M.D., of Elmira, is one of considerable interest. Two of the six cases narrated occurred in young girls, sisters, as the result of prolonged starvation, exposure to cold, and other ill-treatment, inflicted as part of the system of education in a fashionable boarding-school, of which we only regret that Dr. Wey has not published the name and locality.

In Art. XII., Dr. HIRAM CORLISS reports a case of fractured skull, in which he resorted to trephining with a fatal result; and in Art. XIII., which only occupies nineteen lines, Dr. CHARLES BARROWS, of Clinton, N.Y., describes an enlarged kidney which was revealed in a post-mortem examination.

Dr. SAMUEL PETERS, of Crescent, Saratoga County, recommends, in Art. XIV., the use of chlorate of potassa in cases of serous effusion.

Art. XV. gives an account of "A luxation of the ulna not hitherto described, with a plan of reduction and mode of after-treatment, including the management of Colles's fracture," and is written by E. M. MOORE, M.D., of Rochester. Prof. Moore's views have already been published in the *New York Medical Record*, and an account of them has been given by Prof. Hamilton in the last edition of his *Treatise on Fractures and Dislocations*, so that by this time they are probably sufficiently familiar to American surgeons. With regard to the occurrence of dislocation of the lower end of the ulna, in cases of Colles's fracture, we must express our disbelief that it is by any means so frequent as seems to be thought by Prof. Moore. Certainly in the large number of such fractures which it has been our lot to treat, we have very seldom found that difficulty in reduction to which Prof. M. alludes, and to which he believes he has found "the key." As for the treatment advised in cases of Colles's fracture, the application (after reduction) of nothing but a compress and adhesive strip, with a narrow sling, and the total abandonment of all dressings after fourteen days, we regard it as one of the most dangerous recommendations which has ever been made by an American surgeon; with all respect for Prof. Moore, we must express a sincere hope that his practice will find few imitators in this particular.



In Art. XVI., Dr. THOS. M. FLANDRAU gives an interesting account of twelve cases of Trichinosis, six of which proved fatal; in Art. XVII., Dr. C. C. P. CLARK discourses concerning the "Management of the obstetrical forceps;" in Art. XVIII., Dr. R. L. WATERBURY describes the medical topography of Delaware County (N.Y.); and in Art. XIX., the last of the strictly scientific papers, Dr. R. H. WARD narrates a case of successful operation for large vesico-vaginal fistula. Then follow an address on the life and character of the late Dr. ALDEN MARCH (whose portrait adorns the volume as a frontispiece), by Dr. JAMES L. BABCOCK, and short biographical sketches of Dr. BENJAMIN J. MOOERS and Dr. URIAH POTTER, contributed respectively by Dr. T. De FORRIS and Dr. M. SNYDER. The volume terminates with the customary lists of officers, members, etc.

Upon the whole, the New York State Medical Society may, we think, be justly congratulated upon the general harmony of its proceedings at its sixty-third annual meeting, and upon the scientific value and handsome appearance of its published volume of transactions.

J. A., Jr.

ART. XXVI.—*History of Medicine, from the Earliest Ages to the Commencement of the Nineteenth Century.* By ROBLEY DUNGLISON, M.D., B.L.D., late Professor of the Institutes of Medicine and Medical Jurisprudence in the Jefferson Medical College of Philadelphia, etc. etc. Arranged and edited by RICHARD J. DUNGLISON, M.D. 12mo. pp. 287. Lindsay & Blakiston, 1872.

THE well-earned reputation of Professor Dunglison, as one of the most learned and useful of recent medical authors, will secure many readers for this volume, apart from the importance of its subject. Moreover, the topic of the history of medicine bears better than almost any other (except in its latest phases) to be regarded from the stand-point of the last generation. After reading the work with unabated interest from beginning to end, we are prepared to think it a good service to the profession, especially to its junior members, for it to have been published; although more than a quarter of a century must have passed since its composition. This occurred in the form of a course of lectures, which were delivered at the University of Virginia, in accordance with the desire of Thomas Jefferson and his associates, as a part of the very extended duties of Professor Dunglison. These duties included also instruction in "Physiology, Materia Medica and Pharmacy." Of the very few men capable of such cyclopædic labours as this combination of branches involved, the author of the present work was certainly one. As stated in the editor's preface, a certain portion of the earlier part of the book was condensed from the *Geschichte der Arzneykunde* of Kurt Sprengel.

In the proportion of attention given to different eras in the history of medicine, Professor Dunglison appears to have been governed somewhat by the old world and "old time" predilection for the classical ancients. So it happens that, in a volume of less than three hundred pages, one hundred pages bring us only to Hippocrates, sixty more to the Christian era, and two hundred in all to the end of Arabian supremacy in Spain. After this comes the "State of Medicine among the Monks of the Middle Ages;" the close of which chapter leaves but about eighty pages—less than one-third of the volume—for the last six centuries before the present. Every page of the account of ancient medi-

cine is full of interest; it is merely a question of proportion and utility. One cannot but ask why the student needs to read (he surely will not remember) the names, and mostly the nativities, of *twenty-seven* of the followers of Herophilus and Erasistratus, of all of whom it is said, that "they are spoken of with but little respect by Galen, and are said to have been arrogant and loquacious." Nor is it much more momentous, that "history particularly mentions Kha-reth-Ebn-Kaldaht of Takif (A.D. 622), a contemporary of the prophet, who had studied also at Dschondisabour in the Chuzistan," or that the Archbishop of Canterbury, A.D. 671, forbade bleeding in the first quarter of the moon. When we come to the later centuries, we miss the space which might, we conceive, have been there devoted to a much fuller history of the discovery of the circulation of the blood, and later still, to that of the discovery and introduction of vaccination by Jenner.<sup>1</sup> Something more than a mere mention of the fact of the discovery of galvanism (without even a single name) might have been well, in the chapter upon the eighteenth century; and the labours of the chemists, who made the close of that century brilliant, might have been touched upon. Lavoisier is not even alluded to; although his treatise, published in 1789, marked a new start in chemistry, and indeed, through his researches upon respiration, in physiology as well. Some of the greatest discoveries of Priestley, Scheele, Cavendish, and Berthollet, also belong to this century. The wealth of detail, almost exhaustive in the work before us, upon the medical vagaries of the ancients, not only of Greece, but of Egypt, India, and China, makes us regret that a similar amplitude of research was not sustained to the end. It would not then have occurred that Auenbrugger, whose treatise on Percussion was published in 1761,<sup>2</sup> would have been left out; or that the same should be the case with Broussais, born in 1722; Laennec, 1781; and, in surgery, Boyer and Dupuytren. Some mention might, perhaps, to advantage, have been made even of Senac, whom Morgagni called the great; and in Italy, of Baglivi, an able and most practical physician and writer; if not of Rasori, of "contro-stimulant" fame. So might the name, at least, of the vitalist, Barthez of Montpellier, have found a place; and more than this, of Pinel, whose introduction of the rational and humane treatment of the insane (treatise published in 1791) was a striking event in medical history.

Candor requires the expression of a similar opinion as to the lack of entire completeness in the otherwise well-written addition, by the editor, upon early American medicine. It is true, as his own last words indicate, that, in the case *at least* of Dr. Rush, "a sketch of American medical history may seem to be incomplete" which gives, of that truly great man, the name alone. Nor is Physick even mentioned at all, although he was in active practice in 1793; nor Wistar, born in 1761; nor John Warren, born in 1753. Still, the facts given in this supplementary sketch, especially concerning the origin of the medical schools, are important, and add value to the work.

With a style, throughout, of transparent clearness and finished elegance, Dr. Dunglison's book is one which every physician may read through with pleasure as well as with profit. In the qualifying remarks we have made, our judgment has been guided chiefly by our expectation of a degree of perfection in any work from the hand of its distinguished author. There is no other book within our knowledge, of less than twice its bulk, that conveys so much information upon the *history of medicine, or that does what it undertakes so well.* Our principal

<sup>1</sup> The date of Jenner's first vaccination is placed two years later (1798) than that given by his biographer.

<sup>2</sup> It is true that it was little noticed until translated by Corvisart, in 1808.



number of preliminary experiments, he accurately determined the minimum lethal dose of physostigma on rabbits (the animal employed by him), of an average weight of three pounds. This point being definitely settled, a dose of atropia was next given, in combination with the ascertained lethal dose of physostigma, and the fatal result was prevented. The conclusion then seemed perfectly warrantable, that "*when the administration of atropia prevented an otherwise fatal dose of physostigma from causing death, a perfect demonstration was obtained of the power of atropia to produce some physiological action, or actions, that counteracted some otherwise lethal action, or actions, of physostigma.*"

The minimum fatal dose of the extract of physostigma for a rabbit weighing three pounds was ascertained to be 1.2 grains, or 0.4 grain per pound. The minimum fatal dose of *sulphate of physostigmia* was about 0.12 grain, or ten times less than that of the extract. Dr. Fraser notices the fact, that these preparations of Calabar bean are not always of uniform strength, as furnished by different manufacturers—a circumstance that must be taken into the account by experimenters.

In one series of experiments, where the dose of physostigma was the minimum fatal one, Dr. Fraser found that the minimum dose of atropia required to antagonize the former was 0.009 grain; and "that any dose ranging from 0.009 grain to 5.2 grains would counteract the poisonous effects of the minimum fatal dose of physostigma." If, however, the dose of atropia exceed this, and reach to 5.3 grains or more, then "the region of successful antagonism is left, and death occurs;"—the fatal result here being ascribable to the antidote. If the dose of physostigma be increased beyond the minimum lethal dose, a curious and interesting fact is brought out, namely, that there is a sort of ratio or relationship between these two poisons, of an inverse character; thus, while the smallest fatal quantity of physostigma will tolerate a comparatively large dose of its antagonist atropia, by increasing the amount of the former, the maximum antidotal dose of the latter seems to be diminished in about the same proportion. Thus, with one and a half times the minimum quantity of physostigma, the dose of atropia required for successful antagonism was from 0.02 grain to 4.1 grains. With twice the minimum fatal dose of physostigma, the amount of atropia required was 0.025 grain to 3.2 grains. With two and a half times the minimum, the quantity of atropia was 0.027 grain to 2.2 grains. With three times the minimum, the dose of atropia was 0.06 grain to 1.2 grains. With three and a half times the minimum fatal, the dose of atropia required to antagonize was 0.1 grain to 0.2 grain. In this latter case, we perceive that the range is a very limited one, extending only from a tenth to a fifth of a grain of atropia.

Successful antagonism could not be obtained above this dose; and, accordingly, three and a half times the minimum fatal quantity of physostigma (4.2 grains of the extract, or 0.42 grain of physostigmia) appears to be about the largest quantity that can be successfully antagonized by atropia, in rabbits. Beyond this point, we get out of "the region of successful antagonism," and death ensues, according to our author, "either by some non-antagonized action belonging to one or both of them, or by a combination of similar actions belonging to both."

The amount of atropia that is tolerated by the rabbit is enormous. Dr. Fraser finds that the minimum fatal dose of sulphate of atropia for a rabbit weighing three pounds is twenty-one grains. But, although this tolerance is so great, it is remarkable that so small a quantity as 0.015 grain can neutralize the minimum fatal dose of physostigma; and that 0.1 grain is capable of anta-

gonizing a dose of physostigma equal to three and a half times the minimum fatal dose of that poison.

Another series of experiments, made with less than the minimum lethal dose of physostigma, establishes the fact that considerably larger quantities of atropia are required in order to produce death. Thus, if the dose of physostigma be one-half the minimum fatal one, the dose of atropia must amount to 2.8 grains to secure a fatal result; recovery taking place with doses ranging from 3 to 2.5 grains. This result seems singular, inasmuch as a very much smaller amount of atropia—one-tenth of a grain—will counteract the poisonous action of far larger doses of physostigma. The only explanation seems to be, "that there are certain physiological properties of both physostigma and atropia, which are not mutually antagonistic."

The only observable effect produced by these antidotal doses of atropia, when given along with physostigma, was dilatation of the pupils; though doubtless, as remarked by our author, "they must produce energetic physiological effects."

The counteracting power of atropia was found to be rather greater when it was administered before the physostigma than after it.

Another series of experiments was made to determine the effect of time upon the antagonizing power of atropia. When administered five minutes after the physostigma, any dose of atropia, ranging from 0.05 grain to 2.1 grains, will neutralize the fatal effects of one and a half times the minimum lethal dose of the former substance. When administered ten minutes after physostigma, the antagonizing dose of atropia ranges between 0.3 grain to 2.1 grains. When the interval was fifteen minutes, death was prevented by doses of atropia varying from 0.3 grain to 1 grain—a more limited range than the former. In this case, the animal was at the point of death when the atropia was administered; yet in two or three minutes, the most rapid amelioration occurred. If the interval extend beyond this, it is scarcely possible to counteract the fatal influence of physostigma at all. Another fact of interest to be noticed is, that when these two powerful poisons are administered in large doses (5 grains of atropia and one and a half times the minimum fatal dose of physostigma) simultaneously, death is the result; whereas, if an interval of twenty-five minutes occurs between the doses (the atropia being first administered), the animal recovers. This last result may possibly be explained by supposing the atropia to be partially eliminated from the system, or decomposed in the tissues.

Without undertaking to explain the precise mode in which the remarkable antagonism between physostigma and atropia is accomplished, Dr. Fraser thinks that the *fact* is indisputably proved, and certainly we can offer no argument to the contrary. In conclusion, he observes; "the existence of such an antagonism encourages the hope, that the power of directly counteracting disease is far from unattainable; and it supplies a strong incentive to efforts designed to determine the conditions of disease, and the action of remedies, with an exactitude sufficient to show how the remedial action may be applied as a counteracting influence to the diseased conditions."

Assuredly, this subject of the antagonism of poisons offers a most attractive and useful field for further investigation. In some experiments commenced by ourselves a few years ago, the results of which were published in No. CXXI. of this Journal, January, 1871, a certain number of facts seemed to be established, viz., that in the dog (the animal experimented upon), there was no real antagonism, either between prussic acid and morphia, or between atropia and morphia; that is to say, that the ascertained lethal dose of prussic acid could not be counteracted by the administration of varied doses of morphia. Neither

the peculiar symptoms of the former poison were at all disguised, nor was the fatal result retarded. The same is true in reference to the alleged antagonism between morphia and atropia, at least in dogs. But, as regards the human subject, there seems to be such undoubted evidence, both in our own experience and from the testimony of others, of a real antagonism, at least in many cases, between the last mentioned substances, that we feel somewhat at a loss for a definite conclusion. One thing, however, must not be forgotten, viz., that we are not fully authorized, from our experiments upon the lower animals, even those which most nearly resemble man in their physiological relations, to predicate results upon the human subject. The enormous tolerance of certain poisons by animals (atropia, for example, by both the dog and rabbit), is of itself suggestive, at least, of caution against too hasty conclusions upon this very important subject.

J. J. R.

ART. XXIX.—*Recent Works on Syphilis.*

1. *Lectures and Essays on the Science and Practice of Surgery.* By ROBERT McDONNELL, M.D., F.R.S., etc. Part I. 8vo. pp. viii., 133. Dublin: Fannin & Co., 1871.
2. *Syphilis: Its Nature and Treatment, with a Chapter on Gonorrhœa.* By CHARLES ROBERT DRYSDALE, M.D., etc. 8vo. pp. viii., 165. London: Baillière, Tyndall & Cox, 1872.
3. *The Treatment of Syphilis with Subcutaneous Sublimated Injections.* By DR. GEORGE LEWIN, Professor at the Fr.-Wilh. University and Surgeon-in-Chief of the Syphilitic Wards and Skin Diseases of the Charité Hospital, Berlin. Translated by CARL PROEGLER, M.D., etc., and E. H. GALE, M.D., etc. 12mo. pp. 249. Philadelphia: Lindsay & Blakiston, 1872.

1. THE author of the first volume on our list is already well known as an able writer and skilful surgeon, and, if the parts yet to come of his *Lectures and Essays* should possess as much merit as the present instalment, will, we venture to say, be accorded by common consent a place second to none as an expounder of those branches of surgical science to which his attention has been devoted. Indeed, we know of no book which in so few pages gives such a clear and just view of the pathology and treatment of syphilis as does Dr. McDonnell's: its style is moreover remarkably good, and we are disposed to think that very few readers, in laying down the volume, will not experience a feeling of regret that it is no longer. We do not purpose entering into any detailed examination of Dr. McDonnell's views, but will merely say that he is practically a dualist, though willing to admit theoretically the possibility "that the simple and the syphilitic sore may have had in past times a common origin;" that he condemns syphilization; that he has no confidence in the efficacy of the mercurial vapour bath, except as a vapour bath, believing that calomel is not absorbed by the unbroken skin; and that, while he is too sensible not to avail himself of the antisiphilitic virtues of mercury in selected cases, he is a strong advocate for the non-mercurial treatment in the milder forms of syphilis, and justly lays great stress upon the importance of hygienic measures.

As an example of the author's style, we quote from the concluding pages his humorous description of the gradual change in professional sentiment as to the uses of mercury:—

"You will perceive, gentlemen, at a glance, that since the close of the last century King Mercury has lost much of his temporal power. He, then, with the aid of a great Lieutenant-General, John Hunter, ruled despotically over three races. A great territory, a land flowing—but not with milk and honey—the land of gonorrhœa, was beneath his sway. The rest of his people, although as different in race as the Christian from the Jew, dwelt together, as we may say, in the same cities and bowed beneath his sceptre. 'Chancercelles' and 'Chancres' alike submitted to him. The first revolution deprived him forever of gonorrhœa-land. The second was the revolt of the chancercelles; this was headed by the Garibaldi of venereal revolutions, the illustrious Ricord, who, in his earlier days, had struck the last blows which had liberated gonorrhœa from the yoke of the tyrant. This second revolution may now be said to be accomplished. Ricord has won the freedom of the chancercelles. The mercurial despot of former times is now reduced to the condition (pardon me for saying it) of a constitutional sovereign; he reigns only over the true chancres; even among these there is an agitation going on, and a popular demagogue with wonderful powers as a 'mob-orator,' named Paul Diday, bids fair to gain great privileges, if not absolute manumission, for the section known as the 'Véroles Faibles.'"

2. We regret that we cannot speak as favourably of Dr. Drysdale's work as we have spoken of Dr. McDonnell's. The object of the author appears to have been to bring together the diverse views of as many writers as possible, and amidst such a conflict of testimony from different witnesses—all equally "reliable gentlemen"—he really seems at a loss to know what to believe; hence we find such contradictory statements as the following, viz.: "Gonorrhœa is a special inflammation" (page 1); "Gonorrhœa, however, is not probably any very specific inflammation" (page 2); "It is a specific disease" (page 17); and "Gonorrhœa, then, is not a virus" (*ibid.*); again, we read, "Probably six or seven cases of gonorrhœa occur to one of hard or soft sores" (page 1), and "It is for these reasons that chancres are so much more frequently received from women of the streets than gonorrhœa is" (page 2)—from a collocation of which sentences we are forced to the absurd conclusion that gonorrhœa is usually acquired from intercourse with virtuous women. Indeed upon no one point in the pathology or treatment of venereal diseases can we find that Dr. Drysdale has made up his mind; even with regard to the use of mercury, though he "has for many years treated all cases of syphilis he has met with, by means of the iodide of potassium, combined with tincture of iodine, and has in no instance employed any form of mercury," yet he still hopes "that the question may ere long meet with the careful consideration it deserves," and winds up his remarks by exclaiming "How difficult—is it not?—to arrive at sound conclusion [*sic*], with regard to the action of internal remedies, with the very best intentions."

The author's style is as exceptionally bad as that of Dr. McDonnell is exceptionally good: it is usually possible indeed to form a reasonable conjecture as to what Dr. Drysdale means, but it is comparatively seldom that a grammatical construction of his sentences conveys the idea which is evidently in the writer's mind; thus, on page 19, he tells us that Dr. Cazenave, of Bordeaux, cures retention of urine "by introducing a piece of ice about the size of a chestnut into the rectum. This [that is, grammatically, the *rectum*, but Dr. Drysdale evidently means the *ice*] is renewed, if necessary, in two hours, and is infallible, according to that gentleman." Again, on page 11, we read, "Sometimes it happens that the patient is careless; but when this is not the case, the daily passage of a bougie is often a very efficacious method of conquering the malady." But how can the carelessness of the patient impede the efficacy of the *daily* passage of a bougie?—evidently the author means that if the patient is careless he may neglect the daily use of the instrument. One more example we take, from page 9: "In some cases of painful micturition, in the acute stages of gon-

orrhœa, the patient is much solaced by passing water into a utensil nearly full of very cold water." But what difference can it make how full the utensil is, or how cold its contained water is, unless the patient immerses his penis therein while he is urinating?—but this we are not told that he is to do. Finally, we submit the following (page 5), as a sentence in Dr. Drysdale's most sphynx-like style, and confess ourselves unable after the most profound reflection to form the slightest conception of its meaning: "It is now well known that the cause of gonorrhœa is the urethral mucous membrane being red and injected."

If Dr. Drysdale's production has any value (which we doubt), it is as showing "how doctors disagree;" it is certainly the last book we should think of putting into the hands of any one who was desirous of obtaining any definite ideas about venereal diseases.

3. Dr. Lewin's volume has a special value as giving the results of the author's very large experience in the treatment of syphilis by the hypodermic use of mercury. Over seventy clinical histories are given in detail; and, even making allowance for a little natural enthusiasm in behalf of a method with the introduction of which the author's name is so prominently connected, the results certainly seem to warrant the conclusion that, in the subcutaneous injection of mercury, a powerful and efficient remedy has been found, with which the surgeon may hopefully combat cases of syphilis which have resisted other modes of treatment.

The preparation of mercury used by Dr. Lewin is the corrosive chloride, in solutions of three, four, and six grains respectively to the ounce of water. The injections are made with a modification of the ordinary hypodermic syringe, only fifteen minims of the solution being injected in one place, and the minimum and maximum doses for ordinary use being  $\frac{1}{10}$ th of a grain and  $\frac{2}{3}$ ths of a grain of the mercurial salt.

We have no practical experience of this mode of treatment, but should suppose, from Dr. Lewin's account of it, that it would be better adapted to hospital than to private practice, and, on account of the pain caused by the injections and the alarming symptoms of poisoning which occasionally ensue, that it would be reserved by most surgeons as a last resort, for cases of syphilis which should prove intractable to milder means.

We wish that we could say something in praise of the translators' share in the production of this work; but candor compels us to aver that the present is without exception the clumsiest and most unreadable version of a foreign book which it has ever been our fortune to meet with. Beginning their blunders on the title-page (where they call the author Surgeon-in-chief of the Syphilitic Wards and Skin Diseases), they combine, throughout the volume, German idioms with bad English and pedantic Latin, in such a way as to make their author's meaning almost unintelligible; the few notes which they have added might well have been dispensed with, while; on the rare occasions on which a note might really have been of use, no annotation is afforded.

J. A. JR.



ART. XXX.—*Sciatica, Lumbago, and Brachialgia: their Nature and Treatment, and their immediate relief and rapid cure by Hypodermic Injection of Morphia.* By HENRY LAWSON, M.D., Assistant Physician to St. Mary's Hospital and Lecturer on Physiology in St. Mary's Hospital School. 8vo. pp. 200. London: Robert Hardwick, 1872.

This book is a monograph in the narrowest sense, since it is restricted, or nearly so, to the consideration not only of one form of disease, but one method of treatment. This, however, is by no means a derogatory statement, for it is certainly better to have one sure remedy, provided it is a sure one, for one disease, than a hundred doubtful. The author claims no credit for himself as an originator, but is certainly a zealous advocate, and the chief criticism to be made upon the book, with us at any rate, is that he takes a good deal of pains to prove, what most would be ready to admit, that the hypodermic injection of morphia is exceedingly useful in sciatica. We think there are few patients, in this neighbourhood at least, who would suffer, and few physicians who would allow them to do so, so long as the author seems to have done, without experiencing the immense relief, if not cure, which the subcutaneous syringe brings, and we have searched the book with some interest, but in vain, for data to determine how long ago that first injection at the hands of Mr. Ernest Hart took place, which inspired our author to go and do likewise for the relief of his fellow sufferers.

We should be doing him injustice, however, did we represent that he looks only for relief from this procedure.

He expects cure, and apparently is not disappointed. He says, with a good deal of truth, that all that is really known of the pathology of sciatica is, that it is a pain, and that stopping the pain is not relieving a symptom, but curing the disease; and who knows enough of the physiology of pain and the relations of nervous function to nervous nutrition to contradict him? He criticizes with justice both Dr. Anstie's theory of neuralgia being connected with disease of the nerve centres, as destitute of sufficient foundation, and the older and more generally held view of fluid secreted within the sciatic neurilemma on precisely the same grounds.

Part I. contains a description of the disease, with some of its accompaniments of malnutrition, anæsthesia, etc. He thinks that mistakes in diagnosis are made by a habit on the part of practitioners of looking at sciatica too much in accordance with views derived from facial neuralgia. He says that the pain is, in most cases, neither intermittent, nor sharp, acute and thrilling. Sciatica is to be diagnosed from injury to the thigh by external violence; from hip-joint disease or rheumatism of the hip or knee; from disease or injury of the spinal cord or spine; from aneurism or abdominal tumour; from syphilitic pains; and from disease of the sacro-iliac synchondrosis.

As to causes, the author thinks there are only two direct ones, exposure of the limbs to cold and over-exertion.

He goes over a long list of remedies, which it is needless to particularize, attributing some value to tonics, smoking opium, bromide of potassium, and to counter-irritants. He attributes some virtue to the Faradic current applied by the metallic brush, which is chiefly a counter-irritant, but, although he admits that relief may be obtained from galvanism, considers its "employment in sciatica more interesting to the scientific physician than beneficial to the patient."

He comes at last to the true and, as he believes, almost the only remedy for sciatica, the hypodermic injection of minute quantities of morphia.

He uses a very concentrated solution (morphiæ muriat. gr. x, aquæ dest. ʒij) which requires to be warmed before using. His commencing dose,  $\frac{1}{6}$  of a grain, though not a large one, can hardly be considered minute. We decidedly agree with the author in preferring a smaller dose repeated, to a single large one of half or three-quarters of a grain. It is interesting to observe, that without venturing on any scientific explanation, he comes to the same practical conclusion with Dr. Mitchell, that there is less immediate relief when the morphia is injected at a distance from the seat of pain.

A number of cases are detailed, after which lumbago, which is frequently accompanied by herpes and brachialgia, is considered. The local application recommended for herpes zoster is "styptic colloid," to be painted over the vesicles as soon as they appear.

By a judicious arrangement of interesting and valuable information around the leading idea, a treatise of some size and completeness has been produced, which will, however, be chiefly useful to those, if such there are, who do not know how much power they have in their hands, or to others in preventing them from wasting time in experiments.

R. T. E.

ART. XXXI.—*A Manual of Midwifery, including the Signs and Symptoms of Pregnancy, Obstetric Operations, Diseases of the Puerperal State, etc.* By ALFRED MEADOWS, M.D., London, Member of the Royal College of Physicians; Physician to the Hospital for Women, and to the General Lying-in Hospital; Honorary Member of the Obstetrical Society of Berlin. First American from the second London edition, revised and enlarged, with illustrations. 8vo. pp. 473. Philadelphia: Lindsay & Blakiston, 1871.

THIS enlargement of the first edition of Dr. Meadows's work, although still claiming the title of "Manual," assumes more the nature of a treatise, in consideration of the size of the volume, and the amount of material which it contains, its author possessing in a high degree that power of condensation which enables some men to give their ideas in small compass, without materially affecting the quality of the language used for the purpose.

We do not propose to enter upon an elaborate review of the volume, although we have read it through with much care, but will simply take up a few points which may be of interest to the general practitioner. The author says in his preface, "In the present edition I have endeavoured, without any sacrifice of its character as a student's manual, to make the work of at least equal value to the practitioner." This is manifested in various portions of the volume, by the lessons of a practical character which the author draws from his own large experience, and the observations of other writers chiefly of his own country.

It is scarcely necessary to state that the first chapter opens with an account of "the Pelvis," as this is almost universal with obstetric works; we merely refer to it for the purpose of drawing the attention of medical lecturers to the style of condensation of the author as before referred to, which may be used to advantage in the amphitheatre in the education of students. The measurements and diameters given differ slightly from those taught in our schools, but not materially, and the same may be said with regard to the fœtus, fetal head, etc.

The histological and morphological portions of the Manual are comprised in 32 pages, upon the development of the ovum, and the gravid uterus, with illustrations from Valentin and others; and present in simple language the views of modern physiological investigators, such as those of Wagner, Carpenter, Valentin, Farre, Külliker, etc., with comments and conclusions of the author.

In the chapter upon the Signs of Pregnancy Dr. Meadows remarks touching the value of the *placental bruit*: "Care is required, however, not to attribute too much importance to this sign, for the same sound may be heard either directly from the aorta, or vena cava, or indirectly, by being transmitted through any solid body pressing upon those vessels, as in the case of uterine or ovarian tumours. I have often heard it in both of these conditions, when pregnancy did not exist." He holds to the views long since expressed by Stoltz and Cazeaux, and more recently by Prof. Hodge, that the shortening of the cervix uteri is apparent and not real, the neck being increased in its lateral diameter, without any appreciable diminution in vertical length. Prof. Hodge says: "We have for years placed but little confidence in the length of the neck of the uterus as diagnostic of the stage of pregnancy." Dr. Meadows, from his own experience, has been led also to place very little reliance, except as corroborative evidence, in "mammary signs," so called. He also holds a very low opinion of the value of kysteine, which recent investigations under the microscope have shown to be irregular in composition, and very similar to pellicles found on the urine of non-pregnant women, and even of men. We have repeatedly tested the value of this sign in young, healthy married women suspecting themselves pregnant from the fact that their menses had ceased; and in nearly every instance in *such subjects* it has proved to be a reliable sign, although we were always very guarded in expressing a positive opinion based upon it. Its chief value is as an early presumptive evidence.

In the chapter upon the Duration of Pregnancy, the author remarks: "We should always be careful to distinguish between the period of sexual congress and the date of conception. . . . This uncertainty as to when conception follows in any given case is that which doubtless gives rise to much of the apparent discrepancy in the term of gestation. . . . In some cases the spermatic fluid may come almost immediately in contact with the ovum, and impregnate it; in others it may travel along the Fallopian tube, and, retaining its vitality, remain perhaps several days before it meets the ovum to fertilize it." Under this hypothesis a discrepancy of a few days might be accounted for, but what determines the difference between the common period of 280 days, and the various subsequent dates extending, as in the case reported by Prof. Hodge to 330 days after the cessation of the menses? In one case well known to the reviewer, the lady, who suffered with ovarian dropsy, gave birth to a living fœtus ten months after the departure of her husband for Europe.

On the subject of extra-uterine gestation, Dr. Meadows, for convenience of division, gives but four varieties, in correspondence with those of Prof. Hodge, and including the ten forms of Moreau, which are of little advantage and only complicate the study. As the fœtus will always be found either in the wall of the uterus, the Fallopian tube, the ovary, or peritoneal cavity, names given in correspondence should be sufficient, however minute we may be in describing the peculiar connections of the ovum.

Upon the treatment of abortion the author remarks: "Pain and uterine action are synonymous terms, and it is doubtful whether there be any means of arresting uterine action when once it has fairly commenced. Dr. Tanner

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<sup>1</sup> System of Obstetrics, page 49.

believes that it is quite possible to arrest this action by the aid of opium. . . . I must confess that I have never been so successful." This has not been the experience of the reviewer, who upon one well remembered occasion succeeded in arresting an abortion at  $4\frac{1}{2}$  months by the use of morphia, when the patient had marked recurrent uterine pains following a considerable discharge of blood, and returning at longer and longer intervals for ten hours, until the uterine action was controlled by the remedy. The lady was delivered of a living female child at full term.

Prof. Hodge remarks (*op. cit.*) : "The fœtus has often been preserved, even when there have been severe hemorrhage and contractile pains; although under the circumstances expulsion generally results."

Dr. Meadows believes that in labour, uterine contraction commences at the fundus of the organ, and says, page (161), "it extends downwards like a wave till it reaches the cervix, when it returns again to the fundus, keeping the entire uterus, for the time being, in a state of firm contraction: after a time, . . . this action passes off and is followed by a period of perfect rest" (page 162). "I am fully satisfied, both by fact and reason, by experience as well as by theory, that the view here given is the correct one."

In describing the mechanism of parturition, Dr. Meadows follows the teachings of Prof. Nægélé, of Heidelberg, in reducing all presentations of the head to those of the cranium and face; a plan which, while it simplifies the method of instruction, is believed by Prof. Hodge and our teachers generally to carry this simplification too far, and to necessitate the reference to deviated positions of the cranium or vertex. In the language of Dr. Hodge: "As experience proves that many of these deviations are not only productive of delays and increased sufferings, but also that they remain persistent, and thus involve the welfare and even the life of the infant and its mother, we conceive it far better to examine in detail each of the so-called deviated presentations, in order that the complications thus resulting may be well understood, and scientifically treated." In reference to this question, the *Glasgow Medical Journal*, October, 1864, says: "The great attention which the author has devoted to the mechanism of parturition (referring to Dr. Hodge's work), taken along with the conclusions at which he has arrived, point, we think, conclusively to the fact that, in Britain at least, the doctrines of Nægélé have been too blindly received."

With regard to the instruction given upon the forceps, we have only to remark that the character of instruments used and recommended, viz., the long English forceps, the non-crossing ones of Prof. Lazarewitch, of Russia, and the double-curved of Dr. Aveling, are so different from those generally employed here, that they do not correspond either in character, mode of application, or adaptation to the Hodge, Davis, or Wallace forceps, which were all designed to fit, and be applied to the sides of the child's head wherever possible, no matter what may be its relations with the pelvis. In the two illustrations given, the short forceps are being applied to the *sides* of the fœtal head in an occipito-anterior position of the vertex at the inferior strait; and the long forceps in a first position of the vertex at the superior strait, with the blades over the sides of the forehead and occiput. We have, it is true, many obstetricians who use forceps corresponding with the English, Edinburgh, and German instruments, such as those of Bedford and Elliott of New York, which are much employed in that city, and by those whom they have instructed; but, under the more modern use of the forceps, as an aid to feeble women to assist in their delivery, prevent exhaustion, and shorten the period of suffering, as employed by the most careful obstetricians in Philadelphia, there is no instrument. in the



of the uterus ; and puerperal diseases, viz., phlegmasia dolens, puerperal mania, and fever. These articles are well written, practical, and of great use to the practitioner, giving evidence of large experience, and a closeness of observation on the part of the author.

The American edition is in clear, excellent type, well illustrated, and presents a very creditable appearance. We cordially recommend the work as one of ready reference upon many practical points in obstetrics.

R. P. H.

ART. XXXII.—*The Origin of Cancer: considered with reference to the Treatment of the Disease.* By CAMPBELL DE MORGAN, F.R.S., Surgeon to the Middlesex Hospital. Small 8vo. pp. vi., 87. London: J. & A. Churchill, 1872.

THIS little book, which is in part reprinted from the pages of the *Lancet*, contains a well-reasoned and well-written argument in favour of the "local origin" theory of cancer, which, as our readers may remember, was so ably advocated by the late Mr. C. H. Moore. Mr. De Morgan admits that there may be an inherent or constitutional tendency to cancer, just as there is often observed an inherent tendency to warts, or to fatty or sebaceous tumours, but denies that cancer is at its beginning a constitutional or blood disease, and maintains that it is at first as strictly a local affection as other forms of tumour, or as the variety of keloid seen in cicatrices. The author's remarks upon the modes of dissemination of cancer are well worthy of attention. As an indication of the existence of general contamination, the presence of *sciatic pain* is particularly referred to. "The fact," says Mr. De Morgan, "was pointed out to me by the late Dr. Ferguson, many years ago, and of its truth I have had abundant proof. Why it should be so, I do not know; sometimes it appears to be connected with that softening of the iliac bones, which we find in cancerous patients."

The author properly insists upon the important bearing of the theoretical views entertained as to the origin of cancer upon the modes of treating it: if it is considered a blood disease, "we must strive to find some corrective to the constitutional taint, or to the blood-poison," but if its local origin be admitted, the hope of safety evidently lies in early and complete removal. His plea for early operation seems to us so well founded and so forcible, that we cannot do better than quote it:—

"Given a defined tumour in the breast of a woman over thirty, and, however negative other signs may be, sooner or later we may be sure that an operation will be required. There may be cases of general or partial enlargement of the breast, with pain and hardness, which, while in the end they may prove cancerous, yet may result from simple chronic irritation, and which subside under proper treatment; such cases it will be right to watch. There may be cases in which a lump in the breast presents characters which leave a surgeon in doubt as to whether he has to deal with a tumour, or a deep abscess, or a cyst. Here exploration may be necessary, and if this reveal the existence of abscess or cyst, simple evacuation of the contents may be all that is required. But, if tumour be undoubtedly present, such as sarcoma, or colloid, or adenoma, it is true that no harm might come from waiting, though no good would be done. But suppose it to be cancerous; what irreparable mischief may not ensue from delay? To-day the glands may be free; to-morrow they may be infected: not to such an extent as to attract notice, but not the less to be the nidus of future cancer growth. To-day all existing disease may be within the range of our

operation; to-morrow, disease may be distributed far beyond. Yet, what is more common than for a surgeon, when a patient has pointed out to him 'a lump' in her breast, and he has found that she is in good health, that there is no puckering of skin or retraction of nipple, and that the glands in the axilla are not enlarged, to assure her that she need not be uneasy, but that she should watch the swelling, and apply ointments, lotions, etc. A month or two afterwards, perhaps, she is seen again; and then there is adhesion of skin, and a small, hard gland in the axilla. What does this puckering of skin, etc., imply, save that the influence of the disease, or rather the disease bodily has been spreading in all directions, and that possibly it may have extended beyond reach, even if it could be detected. Are the chances of success equal under these altered circumstances? I shall believe that only when I find that leaving behind a visible piece of cancer structure in an operation is of no consequence. . . . I should say, then, that in the case of a doubtful tumour, the surgeon ought not to wait till its true character has revealed itself; but that he should proceed forthwith to ascertain its nature by exploration, and be prepared at once to remove it if it turn out to be cancer, or any disease likely to become serious. He would save his patient much risk and much anxiety."

In taking leave of Mr. De Morgan's little volume, we most cordially commend it to the attention of our readers.

J. A., JR.

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ART. XXXIII.—*Lectures on the Principles and Practice of Physic. Delivered at King's College, London, by Sir THOMAS WATSON, Bart., M.D., F.R.S.* Fellow and late President of the Royal College of Physicians in London, etc. etc. In two volumes. From the fifth revised and enlarged English edition. *Edited, with Additions and numerous Illustrations, by HENRY HARTSHORNE, A.M., M.D., Professor of Hygiene in the University of Pennsylvania, etc.* 8vo., vol. i. pp. 880; vol. ii. pp. 963. Philadelphia: Henry C. Lea, 1872.

THE first edition of these lectures was published in 1843, and, although since that time there has been almost a revolution in medical thought, they still maintain their popularity. Nor is this to be wondered at, for not only is Sir Thomas Watson one of the most agreeable and elegant writers in our profession, but there is abundant evidence in every part of the edition we are called upon to notice, that he is fully alive to the necessity of keeping himself abreast with the present condition of medical science. There are, it is true, a few subjects which seem to us rather superficially treated. This is without doubt partly owing to the difficulty which every one must experience who attempts to compress into two volumes all that is comprehended in the title of the *Principles and Practice of Medicine*. There are, however, some of the lectures the deficiencies of which cannot be fully explained in this way. For instance, the chapters on inflammation, although improved by the additions of the accomplished editor, are not equal to those on the same subject by Professor Wood in our own language, and of M. Jaccoud in the French language. Again, in the lectures on jaundice Dr. Watson makes no allusion to the theories of Frerichs and Murchison as to the origin of those cases of icterus in which the discoloration of the surface cannot be traced to reabsorption of bile. The explanation of these cases has always given trouble to pathologists, but there are few who will agree with the author that they always depend upon a conversion of the colouring matter of the blood into that of the bile. While admitting, however, with Dr. Hartshorne, that these lectures are not, and were not intended to be exhaustive, few readers will dissent from his opinion that they present

"the most lucid and interesting exposition of the Practice of Medicine, in the light of careful research and large experience, which our language affords."

It is a pleasure, moreover, to find one who has attained the advanced age and prominent position of Dr. Watson ready to subject new theories to careful study and consideration, and willing to acknowledge that methods of treatment previously recommended by him are objectionable. Thus, when speaking of mercury as a remedial agent, he says, quoting words that he had formerly used, "the great remedial property of mercury is that of stopping, controlling, or altogether preventing the exudation of coagulable lymph; of bridling adhesive inflammation; and if we in our turn could always bridle or limit the influence of mercury itself, it would be a still more valuable resource." This statement of the special properties of the drug, he thinks, can no longer be maintained in the full and unqualified sense of the words just cited, and we, therefore, find him placing restrictions upon its use, and recommending its employment principally in the treatment of those diseases in which there is reason to believe that the inflammation takes its origin in syphilitic infection.

It is, of course, impossible within the limits of a brief notice to lay before our readers the general plan of the work, and this indeed is not necessary, as it does not differ from that of former editions, and seems to have been adopted by the author simply because it was the most convenient. The additions made by Dr. Hartshorne are always inclosed within brackets, so as to leave the text otherwise unaltered. He has, we think, wisely retained many of the comments and additions of the editor of the previous American editions, wherever this could be done with justice to the present state of medical opinion and experience. The most extended articles by Dr. Condie are upon remittent fever, yellow fever, cholera infantum, and cerebro-spiral meningitis. Dr. Hartshorne has commented at the greatest length upon medical thermometry, the pathology of croup, the causation and prevention of yellow fever and cholera, but the frequent occurrence of the brackets, above alluded to, furnishes sufficient proof that every part of the work has been carefully revised. Unquestionably it has been very much increased in value by the thorough revision it has received, and many of the deficiencies of which the author himself seems to have been aware (if we may judge from a remark which he makes in the epilogue), have been thus supplied, but we cannot help regretting that the editor has not chosen to have recourse, in some instances at least, to foot-notes rather than to interpolations in the body of the text, especially in cases where his opinions are more or less opposed to those of the author. The most noticeable instance of disagreement between the two is in regard to the pathology and treatment of cholera. The latter has adopted Dr. George Johnson's theory of the nature of the disease, and is consequently a warm advocate of the eliminative plan of treatment; the former justly regards this theory as too exclusive, and the treatment the worst that can be instituted, and proposes to combat this formidable enemy of our race with the frequent administration of minute quantities of the diffusible stimulants.

Dr. Watson is to a certain extent a convert to the doctrines of Niemeyer as to the nature of phthisis, and the relations which this bears to tuberculosis. The fact that he is so is a sufficient answer to the assertion, which was made by an author whose book we recently noticed in this Journal, that physicians of age and experience were always adherents of the older views. The editor is willing to acknowledge that phthisis is occasionally of inflammatory origin, but does not fully accept Niemeyer's opinion "that tubercle is always a secondary formation, dependent on *resorption* of the products of inflammation in the lungs or in other parts." This, he thinks, is opposed by some important considera-



tions. "For instance," he says, "what we call scrofulous caseous degenerations of the lymph-glands and bones are very common in children; yet pulmonary tubercularization does not follow in a large proportion of such cases. Again, broncho-pneumonia, or catarrhal pneumonia is decidedly more frequent in children than adults, but phthisis is much more common (as it ought not to be according to the views of Buhl, Virchow, Oppolzer, and Niemeyer) after the age of fifteen than before it." We do not look upon these objections as entirely unanswerable, although they certainly have some force. There is unquestionably a close connection between suppuration and the occurrence of pyæmia, and yet no one would contend that this relationship did not exist, because there are many cases of suppuration in which no pyæmic symptoms are at any time set up. In the same way, although we incline strongly to the view which makes tuberculosis a sequel of the absorption of caseous products, we are ready to admit, with Dr. Hartshorne, that pulmonary tubercularization does not invariably take place in individuals who are the subjects of scrofulous enlargement of the lymphatic glands. As regards the relative frequency of catarrhal pneumonia in children and adults, there appears to be good reason for thinking that the disease occurs oftener in the latter than is generally supposed, and that a part of the immunity from the sequelæ of this disease, which the very young enjoy, is due to their great recuperative power, and to the fact that they are generally carefully guarded from exposure during and subsequent to the attacks.

We can well understand, from the perusal of these lectures, the great popularity of Dr. Watson as a teacher. He evidently possesses the faculty, and we regret that it is not more common, of investing every subject he discusses with interest, and we consequently know of few books of the same scientific value which are really so pleasant to read as these lectures. Few writers, moreover, excel him in power of description, and the intelligent student of medicine who selects this as his text-book, will find the outlines of the various diseases so clearly traced that he will rarely fail to recognize them when he meets with them in practice. The directions in regard to treatment are also excellent. Without being at all dogmatic, Dr. Watson tells us how he would treat the different forms of disease, which, we think, is an infinitely better plan than that of puzzling the student with a review of the methods of treatment recommended by various authors, and leaving him in the end uncertain how to act in an emergency.

J. H. H.

ART. XXXIV.—*Ueber fremde Körper im Ohre, und eine sichere und gefahrlose Methode, dieselben zu entfernen.* Von Dr. Löwenberg in Paris. Separat Abdruck aus der *Berliner Klinischen Wochenschrift*, 1872, No. 9.

*Foreign Bodies in the Ear, and a Sure and Safe Method for their Extraction.* By Dr. Löwenberg, of Paris. (A reprint from the *Berlin Klinische Wochenschrift*, 1872, No. 9.)

IN this paper Dr. Löwenberg describes a method of extracting foreign bodies from the ear, devised and called by him the agglutinative method.

The writer assumes that the vast majority of practitioners of medicine and surgery are unable to use the ordinary instruments for extracting foreign bodies from the ear without injury to the patient, and narrates many cases to prove that not only the patient suffers more from the attempts at extraction, but that it not infrequently happens that the surgical interference has been applied to the wrong ear, and states that children have been brought to him with the right ear inflamed as the result of manipulation on the part of friends and in-

experienced surgeons, while the foreign body was lying unnoticed and harmless in the left ear.

In most cases of foreign body in the ear, the author thinks that all instrumental endeavours may be excluded from the treatment, and that the general practitioner can confine himself with the best results, to the use of injections of warm water by the syringe, or, as a last resort, adopt the agglutinative method.

In any case where the foreign body has been in the ear for some time, and inflammatory symptoms have manifested themselves either in consequence of the presence of the foreign body or violent endeavours to extract it, we should satisfy ourselves at the outset of our treatment whether a perforation in the *membrana tympani* exist. If the membrane is perforated, the stream of water from the syringe may force the foreign body into the cavity of the tympanum, an accident greatly to be deprecated but which Dr. L. has had happen to him.

If, then, a perforation of the membrane is present, the agglutinative method is especially adapted to aid our efforts at removal of the foreign body from the *meatus auditorius*.

The author says, it is especially important to work with proper material, and the *preparation* of the adhesive mass plays a most prominent part in the treatment. First dissolve some good cabinet-maker's glue in a minimum amount of water. If these preparations can be made the day previous to the operation, it is advisable to put a small quantity of water to the glue, and let it stand till just before the operation, then warm it over a water-bath till the water is well driven off and the mass is almost solid. The brush for applying the glue is made by binding a small strip of old linen to a little stick, say a match, and unravelling a few millimetres of the edge of the linen band, which projects beyond the end of the stick. Then dip the point of the brush into the glue, without touching the side of the brush, and place it in contact with the foreign object, letting the pencil fall against the object rather than forcing it against it.

Before the operation the patient should lay his head upon the arm of a chair or sofa, and he must remain three-quarters of an hour in the same position, till the glue becomes hardened. Very gentle traction will then remove both instrument and foreign body. If the object to be extracted is a needle or a pin, the side of the charpie pencil may be smeared with the glue.

The author thinks this method could be applied to cases where the foreign body has entered the cavity of the tympanum through a perforation in the membrane. In cases where the foreign body is moist, it should be made as dry as possible. If this cannot be done, glue may be abandoned and small quantities of plaster of Paris, or any cement which hardens in the presence of water, substituted.

The author says that Celsus (*Lib. vi. Cap. 7*) advocated the use of adhesive mixtures in the extraction of foreign bodies from the ear.

In modern times Triquet and Voltolini have used such mixtures for the same purpose. The standard works on the ear of the present day do not mention the subject, with the exception of that of Rau, in which it is disregarded.

The author closes with the hope that his colleagues will not forget the method he advocates, especially in those critical cases where the foreign body entirely fills the *meatus auditorius* or has become imbedded in it. In just such cases it is most easy as well as important to use the agglutinative method, and avoid the use of all instruments devised for the extraction of foreign bodies, which, it is true, may be useful in skilful hands, but in the majority of cases lead to serious complications.

C. H. B.

ART. XXXV.—*On Winter Cough, Catarrh, Bronchitis, Emphysema, Asthma: A Course of Lectures delivered at the Royal Hospital for Diseases of the Chest.* By HORACE DOBELL, M.D., Senior Physician to the Hospital, etc. New and enlarged edition, with coloured plates. 8vo. pp. 230. London: J. & A. Churchill, 1872.

DR. DOBELL has rendered himself rather notorious of late by the pertinacity with which he has advocated the use of the pancreatic emulsion, his own invention, in the treatment of consumption. The invention, if we may so call it, was the natural result of the theory which originated with him, that phthisis consists principally and primarily in a derangement of the secretory function of the pancreas, in consequence of which it is prevented from taking its proper part in the emulsification of the fatty articles of food. This theory of the pathology of the disease which seems to be as little supported by scientific observation as any with which we are acquainted, has not, we believe, been adopted by a single physician of distinction, and the marvellous effects of the remedy, claimed for it by Dr. Dobell, have been witnessed by few besides himself.

The book which we are called upon to notice to-day has rather an objectionable title, inasmuch as it is one calculated to attract the attention of the non-professional quite as much as that of the professional reader. Indeed we suspect it was chosen partly for that purpose, for not only is the book written in rather a popular style, but claims to unusual skill in the treatment of winter cough are rather freely made in it.

Notwithstanding the prominence, however, that has been given to "Winter Cough" in the title, a large part of the book is devoted to the discussion of emphysema. Of the various theories of the nature and origin of this condition, Dr. Dobell prefers what is known as the "Expiratory Theory," which, he thinks, is applicable not merely to those cases in which cough has been a marked and persistent symptom, but also to that class of cases, the explanation of which has generally puzzled pathologists, because there has been at no time evidence of any interference with the expiration. A careful inquiry into the history of such cases, he says, will generally disclose the fact that they have suffered, or are still suffering from thickening of the mucous membrane of the naso-pulmonary tract. When this is the case, a very slight interference with the expiratory act, such as occurs in sneezing or in blowing the nose, will be sufficient to produce distension of the air-cells of the lungs. Although fully inclined to agree with Dr. Dobell that the majority, if not all cases of emphysema are better explained by the expiratory theory than by any other, we do not think that its general adoption by the profession is as much owing to his advocacy of it as he seems to intimate.

Emphysema is a condition which is not so likely to give rise to cough as the bronchitis which was its cause, and which is its almost constant accompaniment. In patients whose cough cannot be attributed to this cause, Dr. Dobell believes that a careful examination will detect one or other of the following diseases. 1, post-nasal catarrh; 2, chronic recurrent laryngeal catarrh; 3, ear-cough;<sup>1</sup> 4, follicular disease of the pharynx; 5, superficial inflammation and serration of the edges of the soft palate; 6, elongated uvula, becoming relaxed and œdematous with every fresh attack of cold. Some pages are devoted to the second and third of these conditions, but the others are passed over without special notice.

<sup>1</sup> By ear-cough is meant a cough produced by a reflected irritation, originating in a hyperæsthetic condition of the nerves distributed to the various parts of the auditory apparatus.

Dr. Dobell expresses, in the preface to the second edition, his due sense of the compliment a large number of his professional brethren have paid him in consulting him in reference to their own "winter cough," having been led to do so by reading his papers on the subject. We, therefore, turned with some interest to those chapters of the work in which the treatment of this affection is discussed, but we have been unable to find in them anything very novel. The medicines recommended are those in general use in the management of bronchial inflammation, with which and with their therapeutic uses the physicians who sought relief at his hands must have been perfectly familiar. A formula of a prescription is indeed given, which is asserted to have such wonderful power in arresting a cold at its beginning, that it is known among some of the Doctor's patients as the "Magic Mixture." We take it for granted that our readers, like ourselves, would be very glad to have the power always of keeping a commencing catarrh under their thumbs, and therefore give the description of his treatment in the author's own words: "Give five grains of sesquicarb. of ammonia, and five minims of liquor of morphia in an ounce of almond emulsion, every three hours. 2. At night give ʒjss of liq. of acet. of ammonia in a tumbler of cold water, after the patient has got into bed and been covered up with several extra blankets; cold water to be drunk freely during the night should the patient be thirsty; 3, in the morning, the extra blankets should be removed so as to allow the skin to cool down before getting up; 4, let him get up as usual, and take his usual diet, but continue the ammonia and morphia mixture every four hours; 5, at bedtime the second night give a compound colocynth pill. No more than twelve doses of the mixture from first to last need be taken as a rule; but should the catarrh seem disposed to come back after leaving off the medicine for a day, another six doses may be taken, and another pill. During the treatment the patient should live a little better than usual, and on leaving it off should take an extra glass of wine for a day or two."

Cases of post-nasal catarrh are to be managed by a combination of medicated injections, medicated snuffs, medicated lozenges, and rubefacient liniments, into the composition of all of which except the first camphor enters largely.

In addition to its other faults there is a good deal of repetition throughout the book, sufficient of itself to sink it even if it had more merit than it actually has. Great care has, however, evidently been taken with the statistical portion of the work, and the two plates illustrative of morbid conditions of the lungs which have been introduced into this edition are well executed.

Two new chapters have been added by the author, one "On the natural course of neglected Winter Cough, and on the interdependence of Winter Cough with other Diseases;" the other "On Change of Climate in Winter Cough." Fresh matter has been inserted under the heads of "Ear Cough," "Post-nasal Catarrh," "Laryngoscopy," "Artificial Respiration," and "New Instruments and Methods of Treating Emphysema of the Lungs." J. H. H.

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ART. XXXVI.—*Consumption and the Breath Rebreathed. Being a Sequel to the Author's Treatise on Consumption.* By HENRY MACCORMAC, M.D., Consulting Physician to the Belfast General Hospital. Pamphlet, pp. 154. London: Longmans, Green & Co., 1872.

"THE theory set forth in these pages is calculated," the author gravely informs us in the preface to this essay, "to shed a light on the phenomena of tubercular consumptive disease, which the last two thousand years have failed

to do. Never," he goes on to say, "were these phenomena rendered thus intelligible before." The theory whose claims to consideration are thus modestly stated, is simply that the various conditions known as scrofula, tuberculosis, and phthisis have but one cause, and that is the "respiration of air already breathed." Inasmuch as Dr. MacCormac seems disposed to complain of his reviewers, and we are anxious not to do him injustice, we will let him speak for himself.

"The *raison d'être*, then, the only one of phthisis, is the habitual infringement of the great natural law which prescribes that we shall at no time breathe air deficient in oxygen, or any portion of which has been fouled by prior acts of respiration. Other than such fouled and halting air, coupled with its habitual inhalation, there is no actual or possible source of phthisis, and I believe in none. The detritus of degradation, speaking of the dead unoxidized carbon, remains, under such circumstances, more or less within, instead of being thrust beyond the precincts of the living, breathing organism. The only means of explaining what becomes of it besides in assuming its conversion into, and, in fact, identity with tubercle. The effete, unoxidized carbon, then, is tubercle, while, conversely, tubercle itself is no other than the effete, unoxidized carbon. One condition of things, to wit: the habitual respiration of already breathed air having begun, the sequence of the other, namely, the deposit of tubercle, follows as a matter of necessity. Reciprocally and reciprocally, they explain and account for each other perfectly."

This is undoubtedly the strongest argument in favour of ventilation with which we are acquainted; but unfortunately, as has already been pointed out by an intelligent critic of Dr. MacCormac's views, we certainly see phthisis in persons and families who, as regards the breathing of fresh air, are more favourably circumstanced than other persons and families in whom it is not developed. Still less does this theory account for the occasional occurrence of tubercle in the fœtus, which has never breathed at all—an objection to his theory which Dr. MacCormac, it is true, appears to see, but does not meet very satisfactorily.

Assuredly the repeated inhalation of a "pre-breathed" air is among the most powerful of the predisposing causes of phthisis; and amid the turgid writing of this essay may be found good arguments in favour of the more efficient ventilation of our dwellings by night, as well as by day, and in favour of a life spent as much as may be in the outer air. Had Dr. MacCormac attempted to prove no more than this, avoiding the bombast which disfigures his pages, and punctuating his sentences according to the rules observed by less pretentious mortals, he would have done a good work, which would no doubt have been appreciated, and would have avoided the ridicule which has greeted him as the self-constituted equal of Newton.

We have already made liberal extracts from the book; we cannot, however, forbear adding to them two others. The first, as the specimen of the author's style and punctuation; the second, because it may possibly gratify our eastern friends. "I would speak in especial of a chamber which I once entered, as I had often before entered it, early one winters morn. It was the sleeping closet of my son. His low trestle-bed stood betwixt the severally widely open window and door, while the keen but exquisitely fresh sweet atmosphere from wind-swept hills careered through the apartment ceaselessly. The hue of exuberant health mantled over the boys every feature while, bordering the margin of the coverlet, there extended a fringe of pure white snow which the genius of the fragrant night had wafted in all harmlessly during the hours of my child's repose." "The *φύσις* of the Indian indeed is for the most part quite admirable, whereas such lank sallow hollow-checked flat-chested hipless tooth-decayed men and women, as I too often encountered in that newer England, I never saw before or wish to see again."

J. H. H.

# QUARTERLY SUMMARY

OF THE

## IMPROVEMENTS AND DISCOVERIES

IN THE

### MEDICAL SCIENCES.

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#### ANATOMY AND PHYSIOLOGY.

1. *Investigations on Low Organisms.*—In our preceding No. (p. 244) will be found an account of some interesting investigations by Prof. RINDFLEISCH, of Bonn, on this subject. The learned professor has continued his researches, and published the results in *Virchow's Archiv.* for March last. These experiments have even greater scientific interest than the previous ones. His present researches have reference to the origin of those lower organisms which appear in decomposing substances, and to which the author applies the name schizomyceta, including vibrios, bacteria, zoogloea, etc. In reference to these bodies, the great question is, Do they attach themselves to putrescible (but not yet putrefying) substances, and, by their vital processes, induce the putrefaction of these substances? or, on the other hand, are they merely the results of putrefaction, the substances first decomposing, and so affording a fit medium for the development of their organisms, which arise by equivocal generation from the decomposing body? The author, it may be remarked once for all, used the greatest precaution in conducting his experiments, the metal instruments which he used were always, immediately before using them, heated to a red heat (superheated) and the glass slides, etc., first steeped in absolute alcohol, and the alcohol got rid of by burning it off in the flame of a lamp. The substance experimented on was a minute portion of the muscle of a freshly killed animal, removed with the precautions referred to, placed in distilled water on a glass slide, and examined with an immersion lens. He found very soon that a number of granules appeared, which possessed a rapid motion; that these after a time adhered to some part, the free end or head hanging loose in the fluid. This end increased in length and thickness, so as to form a club-shaped body, and by and by the head of the club became separated from the handle by a groove so as to form two joints of a chain. By repetition of this process a chain was formed of considerable length, and consisting of numerous joints. Each joint seemed to possess the power, so long as it retained its position, of dividing into a number of smaller members, and, contrariwise, neighbouring joints seemed to have the power of resolving into a single large one. The chain so formed then may break up, each joint forming an individual bacterium, which possesses a spontaneous power of motion, and is hence considered by the author to be animal in its nature. Sometimes these bacteria collect together into groups, and come to a state of rest, forming what Cohn has named zoogloea, but these are not to be looked on as the source of the bacteria. Coming to the naked eye appearances of decomposing substances, the thin scum which grows on such fluids is due to the interlacing

chains described above, these chains hanging down into the fluid and giving off the individual bacteria. In addition to bacteria, the author found in his experiments the organism named micrococcus, which he considers the lowest vegetable form, as the bacterium is the lowest animal. The micrococcus does not possess voluntary motion, and has no relation whatever to the bacterium. At this stage, and before considering how the questions started at the outset are to be answered, the apparatus used is described. A glass slide the size of stage of the microscope is taken, and a square piece of an ordinary glass slide attached to it with Canada balsam. Around this latter is placed a piece of blotting paper, which communicates with a vessel outside containing water, and finally the cap of Recklinghausen's moist chamber is placed over the slide. The piece of muscle is placed on the square glass slide and covered with a cover-glass fitted with wax as described in the former paper.

Now as to the origin of these lower organisms. He found that they appeared in the fluid after two days, when he had used distilled water and taken the greatest precautions against the admission of dust. He found, however, that, on using ordinary spring water instead of distilled water, the development was much more rapid and the organisms more abundant, and this set him to consider whether distilled water may not have picked up after its distillation the germs of these organisms, or whether the germs are actually destroyed by boiling, the experiments of Co' . . . . . able that certain organisms do survive boiling heat. He, . . . . . to repeat the experiment, taking greater precautions that the water was not contaminated. A glass slide, which had been most carefully prepared as above, was held over a vessel containing boiling water, and the condensed steam collected into a drop by a piece of platinum wire which had just been superheated. When this water was used for the experiment instead of ordinary distilled water, "even after weeks, no schizomyceta appeared." The germs of these organisms had therefore in the former experiments been picked up by the distilled water. That these germs had been derived from the contact of the distilled water with the earth, and not from the air, was proved very sufficiently by the following. Portions of meat from a newly-killed animal were placed (with the usual precautions) in open-mouthed glass bottles, and exposed outside the house to the sun and rain. The rain came down, doubtless carrying with it all the solid impurities of the atmosphere, and was succeeded by heat. But, though this decomposable substance was thus exposed to all the atmospheric conditions of putrefaction, and though fungi grew in it in considerable abundance (their spores floating in the air) yet no bacteria were developed and no odour of putrefaction. This took place while other preparations which had simultaneously been made with ordinary distilled water swarmed with bacteria. The conclusions from these facts are obvious; no putrefaction occurs without these organisms, and they are therefore the causes of putrefaction and not the results; their germs must be communicated to the decomposable substance before it putrefies, and these germs are derived from the earth and not from the air; these organisms cannot arise from fungi, for here were all the other conditions of putrefaction and fungi in abundance, but no decomposition occurred. The author, at the end of his most valuable paper, suggests the application of his method to the investigation of diseases supposed to be of parasitic origin, and concludes by summing up his results in nine propositions.—*Glasgow Medical Journal*, August, 1872.

2. *Characters of the Uterine Movements.*—D. L. OSER and W. SCHLESINGER have undertaken a series of investigations on the characters of the uterine movements, which, they observe, have been but little studied of late years, and with improved means of research, whilst those of the intestines, ureters, and other organs have been carefully examined. Their experiments were performed upon for the most part twenty curarized animals, and are recorded in the last part of Stricker's *Med. Jahrbucher*. At the commencement they found not unfrequently that a stimulus which in one animal excited the most violent uterine contractions, in another was apparently wholly inoperative, and this not only in animals of different genera, but in those of the same species. In

rabbits, for instance, it sometimes happened that the slightest mechanical stimulus called forth active contractions, whilst in another animal no response occurred to the strongest electrical currents. They find that the animals best adapted to exhibit the movements are young but sexually mature rabbits which have not yet been impregnated. In these the uterus, when the abdominal cavity is laid open, appears as a flat, band-like, pink-coloured organ, at perfect rest, and but rarely exhibiting spontaneous movements. Their first experiments were made to determine the effect of arrest of the respiration. Krause, Mayer, and Basch have all shown that asphyxia induces movements of the intestines; but it has not hitherto been shown that a similar effect is produced upon the uterus. Oser and Schlesinger's experiments, however, show that, in from ten to thirty seconds after suspension of the respiration, contractions are perceptible, commencing from the tube and cervix, which in a few seconds more extend over the whole uterus. This organ becomes pale, cylindrical, and rigid, and moves downwards and towards the middle line; the cornua raise themselves in an arched manner, and, intercoiling, almost form a ball. The contractions increase in vigour with continued arrest of the respiration for some minutes. In a second set of experiments the effects of compression of the aorta were investigated, and it was ascertained that general contractions of the uterus occurred in a period varying from eighty to one hundred and twenty seconds after. Rapid abstraction of blood from the system generally produced the same effect. It was remarkable also that contraction of the whole uterus resulted in a few seconds from suddenly applied compression of the four cerebral arteries, which showed that the presence of imperfectly arterialized blood in the uterus itself was not a necessary condition for the production of the contractions. Kussmaul and Tenner long ago described a somewhat similar experiment, but gave a different explanation of the phenomena observed. In a pregnant rabbit they exposed and compressed the carotids and vertebrales. Extrusion of the fœtuses occurred, but it was accompanied by convulsions, and they attributed the delivery to these rather than to any contractions of the uterus. MM. Oser and Schlesinger further found that, after section of the spinal cord in the cervical region, the contractions of the uterus no longer occurred more rapidly after arrest of the respiration than after compression of the aorta, in each case supervening in about the same space of time—that is to say, in about one hundred seconds. After section of the cord, neither general loss of blood nor arrest of the flow of arterial blood to the brain produced any perceptible contractions. It was ascertained that no motor stimulus is conducted to the uterus from the brain through the vagus or sympathetic nerves, since section of these nerves was without influence on the movements, whether the cord was divided or not. The authors of the paper do not attempt to fix the situation of the centre for the uterine movements, but they point out that their experiments prove that it lies at a higher point than that at which they divided the spinal cord—namely, between the occiput and atlas; and they think it is probable that it occupies some part of the medulla oblongata. At all events, it is unlikely that it is situated in the spinal cord, since the experiments of Kussmaul and Tenner and Schiffer show very clearly that the circulation of dyspnœic blood (a term that implies no theory as to whether the phenomena produced are due to the absence of oxygen or the presence of carbonic acid) through the cord is not followed by any symptoms of irritation—as by convulsions—but by rapid paralysis of the posterior extremities, the paralysis appearing in the course of a minute or a minute and a half. But in Oser and Schlesinger's experiments the uterine contractions did not occur in any case till after the lapse of a minute; and hence, if it were maintained that they were due to the passage of dyspnœic blood through the cord, it must also be admitted that such blood acts coincidentally as a stimulus to one spinal motor centre and as a paralyzer to another. It is much more probable that they are due to the passage of such dyspnœic blood through the medulla oblongata. Other considerations lead them to the same conclusion.—*Lancet*, July 20, 1872.



## MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

3. *Physiological Action of Chloral.*—Dr. ALEX. EDW. McRAE has published (*Edinburgh Medical Journal*, August, 1872) an account of a number of experiments, undertaken with the view of obtaining the objective phenomena exhibited in a healthy animal under the influence of a varying dose of chloral. The animals experimented on were rabbits.

The following were the general results observed: 1. When sleep began to come on, the rabbits laid themselves in their natural position for sleep, and seemed comfortable. 2. When asleep, they sometimes moved as if shifting for a rest; sleep was not continuous. 3. Before sleep came fully on, and when the number of respirations was about its lowest, the respiratory movements were somewhat jerky. 4. When sleep was very profound, the respirations were abdominal. 5. When asleep, but not totally anesthetized, loud noises, if they did not waken them, increased the respirations. 6. When completely anesthetized, neither loud noises nor pricking influenced the respirations. 7. No rabbit recovered that was at any time completely anesthetized. 8. When asleep, they would frequently wake up and eat, then go to sleep again; and when the effects passed, they ate ravenously. 9. The slowing of the respirations was the premonitor of sleep; and, when the respirations fell to 28, death followed. 10. When asleep, the increase of the respirations was the premonitor of resolution. 11. Shivering was not observed in any instance where death was to supervene, but it preceded resolution. 12. Sometimes 10 grains produced sleep; sometimes 30 grains had scarcely any effect; 60 grains, in two cases, killed; and, in another, did not produce complete anesthesia. 13. Sometimes the hyperæsthetic state was of short duration; sometimes it was scarcely appreciable, so rapidly did the anæsthetic state supervene. 14. Small doses increase, large doses decrease, the co-ordination of nerve force. 15. Vision seems to be affected before hearing, hearing before smell, smell before touch. 16. Frequently, on recovery from a large dose, they preferred to sit under the fire, though hot cinders were falling upon them. 17. When anesthetized, the eyelids were generally fully open. 18. In falling, they did not seem to have a tendency to fall to one side more than the other. 19. Salivation was occasionally exhibited, also relaxation of the sphincters, with increased peristalsis of the bladder and rectum. 20. The solution, when injected under the skin, was absorbed with great rapidity. 21. In the small doses, when the effects passed off, they seemed more lively after than before the experiment. 22. When ten or more grain doses were given, and sleep had passed off, they did not seem to have the power of co-ordinating their movements for some time. Their hind-legs were the first to give way and the last to recover. 23. Of the voluntary muscles, those of the ear, neck, and jaws were the last to give way and the first to recover. 24. Rigidity set in immediately after the respirations ceased. Sometimes the hind-quarters became rigid before the respirations ceased. 25. About four minutes was the time that elapsed between the injection and the manifestation of the first symptoms attributable to chloral. 26. The respirations were very considerably increased immediately the injection was commenced. 27. The injection almost always caused local inflammation, which ended in resolution, abscess, or gangrene. The latter was generally of the dry kind, as observed in senile conditions. 28. In no case was complete anesthesia produced without death following.

*Post-mortem appearances.*—The superficial vessels were empty, and the parts consequently had a blanched appearance. All the internal vessels were full of blood. The walls of the heart were flaccid. Both sides of the heart were gorged with blood. The lungs were congested, with here and there apoplectic spots. I have seen the same conditions in cases of alcoholic poisoning. The vessels of the encephalon were full of blood. The odour of chloral was distinctly perceptible in the substance of the brain.

Dr. McRea remarks: "The superficial vessels and arterioles had contracted;

and the heart, being gradually deprived of nerve force, was unable to contract on its contents and keep up the circulation; consequently, there being an impediment in front, the blood was retained passively in the venous tracts."

In small doses, it seemed to act as a stimulant, and produced heat of surface. In large doses, when the anæsthetic state was produced, the surface became cold. Professor Haidenhain, of Breslau, at the conference at Innsbruck in 1869, stated that "irritation of sensitive nerves produces a rapid diminution of blood-heat, a sensible decrease of the calibre of vessels, and a decrease in the frequency of the pulse." Now, we have all these conditions produced by a dose of chloral. There can be no doubt that chloral, in certain doses, does act as an irritant, but of the toxic kind. Whether it acts as an irritant locally on the peripheries, or on the more distant centres, is a question that still remains to be settled. That it does reach the centres is beyond doubt, for we have found it abundantly in the brain tissues. If the above phenomena are caused by its local action, then it must be a most powerful local irritant—more powerful, indeed, than any other of its chemical fellows, whose action, generally speaking, is nearly analogous, such as alcohol or chloroform. It is true that the local effects produced by the hypodermic injection, viz., inflammation, abscess, gangrene, would rather favour the hypothesis of this local action; but we must remember that the solution used was necessarily concentrated; also that, with the exception of a few rare cases, little or no inconvenience was caused by taking the same size of a dose by the stomach for many months together. Again, when a part is burned or rapidly destroyed, we see the local effects immediately, but no toxic condition follows. True, we sometimes have what is called shock; but the phenomena evolved are quite distinct and recognizable from those produced by a toxic agent. Sensibility characterizes the one, insensibility the other. The presumption therefore is strong that chloral acts directly on the nerve centres.

When small doses were given, there was a very manifest exaltation of the temperature of the surface; when large doses were given, and the anæsthetic state induced, the surface got cold. The hyperæsthetic state was first induced, and always was present, though once or twice its presence was scarcely noticeable, so rapidly did the anæsthetic state supervene; and, when the larger doses were given, anæsthesia followed, thus leading us to believe that the peripheral nerves became paralyzed, either by exhaustion of nerve force in the hyperæsthetic stage, or by direct poisoning and consequent molecular disturbance at the centres. We must here observe, that when we remember Claude Bernard's experiments with the sympathetic nerve, it does seem anomalous to say that peripheral paralysis was present, and that the surface was cold, and the parts post mortem had a blanched appearance. But we must also remember that the heart was paralyzed, and, consequently, the arterial system was empty, though the larger venous tracts were gorged. This condition, though helping to prove that the action of chloral is on the centres, demands explanation. Professor Stirling says, that "there is a constant reflex influence maintained by a sensitive nerve upon the bloodvessel nerves." Nerve force being equally distributed to these two sets of nerves, the bloodvessels maintain their normal calibre. But when the peripheries of the sensitive nerves become paralyzed, the inhibitory nerve-fibres of Remak gain increased power, or at least gain the ascendancy (Meryon), the calibre of the vessels decreases, and, consequently, also the flow of blood; hence the coldness of the surface, and the blanched appearance of the flesh. When given in small doses, it stimulates the sensitive nerves, which gain the ascendancy over the vaso-motor fibres; hence we have relaxation of the walls, enlarged calibre, increased vascularity, temperature, and hyperæsthesia, exactly the opposite of what takes place when a large dose is given.

Could chloral be used in doses sufficiently large, so as to let the fibres of Remak gain the ascendancy over the sensitive fibres, and could this action be localized, and not become universal and lead to death, as we have seen by these experiments, then we should have in chloral a most potent power for good. This, however, can never take place so long as the body possesses absorbents. The fact that rigidity set in immediately after the respirations ceased, and

sometimes before, thus producing a state analogous to that produced by intense cold, proves that chloral induces great depression of nerve force; and, when this depression or exhaustion becomes general or complete, death must follow.

4. *Researches on Quinia and Iron.*—M. RABUTEAU has communicated to the Academy of Sciences some investigations made by him on the physiological properties of quinic acid, and the reduction of perchloride of iron in the organism. Quinic acid, which is solid, and tastes like vegetable acids, such as tartaric and citric, exists in a remarkable quantity in bark, in which it is said to be combined with quinia, cinchonia, and lime. The author has prepared quinate of soda and quinate of potassa by dissolving quinic acid in the bicarbonates of these two bases, and he has made many experiments with these two salts, which are neutral in reaction, deliquescent, and tasteless. He injected into the veins of a dog five grammes of quinate of soda dissolved in forty grammes of water. The only result of this operation was marked constipation. The urine became neutral, and even slightly alkaline, although previously acid. M. Rabuteau took himself two grammes of the quinate of potassa in fifty grammes of water. The urine did not become alkaline, doubtless because the salt was too much diluted, but its acidity was diminished. A watery solution of quinic acid introduced into the stomach does not produce any particular result. From this acid can be prepared a lemonade as agreeable as the tartaric and citric lemonades. These researches show that quinic acid is harmless, and also that it acts almost like all the ordinary vegetable acids; that is to say, it is consumed in the organism, the alkaline quinates being transformed into bicarbonates, which render the urine alkaline when administered in sufficient doses; for example, five or six grammes at least in the day. From the quinate of soda producing constipation after its injection into the blood, it is concluded that, if introduced into the digestive tube in sufficient quantity, it would produce purgative effects, according to the general rule that saline purgatives constipate when they are injected into the blood. The alkaline quinates being destitute of taste, it might be thought that the quinate of quinia would be less sapid than the sulphates. This salt, however, is bitter, like all the other salts of quinia. According to the experiments of M. Rabuteau, the perchloride of iron is reduced by contact with albuminous and various organic substances. It follows from this that, when ferruginous waters containing sesquioxide of iron are taken, for example, in water in which a red-hot iron has been cooled, perchloride of iron is formed by the hydrochloric acid of the gastric juice, and is transformed into protochloride of iron. When perchloride of iron is injected into a varicose vein to obliterate it, it forms a cord, owing to the coagulation of blood produced by this salt; but this cord disappears gradually, for the perchloride is changed into the protochloride, which has not the power of coagulating the blood, but even prevents coagulation, as has been shown by direct injection of it into the veins of animals.—*Brit. Med. Jour.*, Sept. 7, 1872.

5. *Effects resulting from Large Doses of Quinia.*—In the tenth number of the *Centralblatt f. d. Med. Wissenschaften* for 1872, derived from the *Deutsche Klinik*, 1871, No. 46, we find the following summary of the observations of Dr. C. BINZ, on the effects upon the living organism which result from large doses of quinia (over 15 grms.), or of smaller doses frequently repeated at short intervals; namely, 1st, disturbance of the nervous system, and of the heart's action, producing general prostration and feebleness of the cardiac movements; 2d, chronic disturbance of brain; 3d, disturbance of the organs of speech, occasionally entire loss of speech, for a longer or shorter period; 4th, more or less complete, or even incurable amaurosis of one or both eyes; 5th, hemorrhage from the lungs (probably), and eruptions on the skin; 6th, irritation of the intestinal canal from the arrest of the ordinary movements by the action of the quinia; 7th, catarrhal inflammation of the urinary bladder. D. F. C.

6. *Therapeutic Action of Muriate of Lime.*—The chloride of calcium (U. S. P.), which was formerly held in high esteem as a remedy, but which has latterly fallen almost into disuse, Dr. WARBURTON BEGGIE is of opinion pos-

sesses therapeutic virtues sufficiently eminent to restore it to confidence. This remedy was formerly esteemed in the treatment of scrofula, rickets, tabes mesenterica, and lupus. Dr. B. had used it most frequently in cases of struma, the most noticeable feature of which was enlargement of the lymphatic glands in the neck, and he affirms that it has, in every case, answered his expectations. The remedy must, however, be taken for a very long time, before its beneficial effects are visibly produced.

Dr. B. has also used it advantageously in cases resembling tabes mesenterica. "I have observed," he says, "the exhibition of the remedy in such cases to be followed by the cessation of a protracted diarrhœa and of exhausting perspirations, by a subsidence of fever, hectic in type, by improvement in appetite, the gaining of flesh, and a gradual restoration to the condition of health. In the grave disorders of the alimentary canal occurring in children, the muriate of lime is useful in arresting looseness of the bowels, in promoting digestion, and favouring nutrition. I have frequently prescribed the remedy, and been gratified by the results obtained from its use, in cases of children stopping short of any definite disease, but characterized by depraved appetite, loss of flesh, pallor of countenance, protuberant belly, wasted limbs, and more or less of febrile excitement, the latter presenting an intermittent or remittent type, and usually attended by two distinct paroxysms of fever during the twenty-four hours.

"The recognized dose of the muriate of lime is from 10 to 20 grains; but the solution of the old Edinburgh Pharmacopœia forms a convenient mode of its administration, and in that form I have habitually prescribed it. Fifteen drops of this solution, containing about ten grains of the muriate of lime, may be considered an average dose for a young adult or adolescent; and with such given thrice daily in milk, I have usually commenced: gradually the dose may with advantage be augmented to nearly thirty or forty drops; it is, however, not advisable, by reason of its occasionally producing such unpleasant effects—as nausea, sickness, pain in stomach, and loss of appetite—to elevate the dose still further. I have thought that a little period after food is the better time for its administration, but this is not of much importance—many patients taking it with advantage either shortly before or during meals. In the instance of any young children to whom I have frequently administered it, the dose must of course be apportioned according to age. I have given it to such in doses of three to ten drops. Very speedily in some cases, these chiefly of the nature of diarrhœa and feeble digestion with attenuation in children, I have witnessed its beneficial effects—quite as speedily, indeed, as we observe the operation of lime-water as an antacid and alterative. When given in the more chronic ailments, to which reference has been made, and more particularly in the strumous enlargement of glands, a rapid curative action is not to be looked for. Under such circumstances, indeed, the persistent use of the remedy is called for. I feel thoroughly satisfied, however, that in so prescribing and continuing the muriate of lime, the physician and patient may look forward with confidence to its beneficial operation. Weeks, months, a twelvemonth, are surely not to be considered as very lengthened periods of time for the removal of a malady which has existed for many years, and possibly bid defiance to all the other means of treatment which may have been employed. It has been my lot within the past three or four years to prescribe the remedy for patients who have thereafter passed temporarily from my observation, but at the end of months, twelve months, or even a longer time, having meantime, conformably to exhortation, diligently continued the remedy, have again presented themselves, to afford the most gratifying proof of the therapeutic action in their cases of the muriate of lime.

"I have very seldom witnessed the production of any disagreeable effects, and rarely had occasion to interrupt the medicine. In a few instances, I have found that a smaller dose than that usually prescribed appeared to agree better and to work out the therapeutic action of the remedy most satisfactorily.

"No notable physiological feature has presented itself to my notice while watching with care the therapeutical action of the muriate of lime. Conformably to the experience of experimenters, I have observed the acidity of the urino

to be lessened during the administration of the remedy. Dr. Parkes mentions that the result on the urine, of the exhibition of muriate of lime, is a considerable increase in the amount of lime."—*Edinburgh Medical Journal*, July, 1872.

7. *Medicinal Properties of the Bromide of Potassium.*—Prof. Sée, in one of his last lectures at the School of Medicine, expatiated upon the medicinal properties of the bromide of potassium, a drug so much in vogue and yet so little understood. He said it was often prescribed in a most reckless manner, and administered with substances not only chemically incompatible with it, but whose therapeutic action is diametrically opposed to it. For instance, it is frequently ordered with, or as a substitute for, the iodide of potassium, and *vice versa*, and there is a prescription in Bouchardat's "Formulaire" which bears the name of a celebrated physician, containing these two salts in combination with the chloride of sodium and butter, which was to be eaten with bread as a substitute for cod-liver oil. The bromide of potassium acts specially as a sedative on the vascular and nervous systems, whereas the iodide is purely an alterative operating on the general processes of nutrition and elimination. The bromide of potassium is essentially a vascular remedy. It is probable that through the nerves it acts on the muscular coats of the vessels, causing permanent contraction of the latter and consequent anæmia of the organs, a condition opposed to that produced by belladonna. It acts indirectly as a sedative on the heart, which it may stop, but only when given in enormous doses. As a soporific or narcotic it is preferable to opium, particularly in children, as it does not produce headache or the other inconveniences of the latter. Its double action, as vascular and as a nervous hyposthenisant, renders it a most invaluable agent in all cases of neurosis accompanied with congestion of the nervous centres, and hence its great utility in epilepsy, hysteria, chorea, etc.; it has also been found useful in the localized forms of neurosis, such as dysphagia, asthma, hooping-cough, etc. But to be useful in these cases, particularly in epilepsy, it must be administered in large doses, not less than five grammes a day for an adult, and two grammes for a child of 4 in this latter affection. When given in smaller doses it is not only a waste of time, but it increases the epilepsy; and in order to keep the disease in check, he recommends it to be taken continuously, and largely diluted, so as to prevent any irritating effect on the stomach, and to promote its elimination by the kidneys. It is a dangerous remedy in coughs, but most useful in asthma, which it relieves, not by increasing the bronchial secretions, but by relieving the respiration. The bromide of potassium cannot be replaced by the other salts of potash, nor yet by the iodide of sodium, which has lately been recommended as a substitute for it.—*Med. Times and Gaz.*, August 31, 1872.

8. *Action of certain Neurotics on the Cerebral Circulation.*—Drs. PATRICK NICOL and ISAAC MOSSOR have published (*B. and F. Med.-Chir. Rev.*, July, 1872) some interesting observations made by them on the condition of the *fundus oculi*, and especially of the optic disk, under the action of certain neurotic drugs. The experiments on the human eye were made on the authors of the paper and on rabbits. The experiments seem to have been conducted with all proper precautions.

The drugs experimented on were hydrate of chloral, bromide of potassium, alcohol, quinia, ergot, and belladonna.

*Chloral*, when taken by the authors, caused the optic disk to assume a transparent appearance, resembling white wax; and in the rabbit, increased whiteness was produced, due to diminished vascularity. A tendency to anæmia of the brain, therefore, seems to follow the administration of chloral.

When bromide of potassium was given in half drachm or drachm doses, and once with a scruple dose, "the disk and retina were congested, even in ten minutes after administration, and this state of congestion went on increasing, as long as examinations were made. Even after the lapse of several hours, the increased redness was still manifest. The vascularity was found to be greater

<sup>1</sup> Composition of the Urine in Health and Disease, page 166.

as the dose was increased." "It seems, therefore," the authors say, "to be a justifiable inference, that bromide of potassium produces congestion of the brain."

[This inference as to the action of bromide of potassium on the cerebral circulation must cause great surprise, since it is entirely opposed to the results of the investigations of Dr. Brown-Séquard, and to those of Drs. Amory and Clarke; and it would, moreover, seem to be inconsistent with the views now generally entertained as to the condition of the brain in sleep (see *Hammond On Sleep and its Derangements*), and be equally subversive of the received theory of the physiological action of the drug in inducing sleep. Further experiments will be required before the inferences of Drs. N. and M. can be accepted.]

The effect of *alcohol* was to produce congestion of the disk, with congestion of small vessels not seen before, and congestion of the choroid and retina. When brandy was taken three-quarters of an hour after the exhibition of a drachm of chloral, the effect of the spirit in counteracting the anæmic condition, was very manifest. In half an hour the disk and retina were congested, instead of being very pale.

*Quinia*, in ten grain doses, produced an anæmic condition of the disk and retina.

Ergot, in doses of half a drachm to a drachm of the liquid extract, produced a diminution of the vascularity of the disk and retina.

*Belladonna* produced congestion of the disk and retina.

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9. *Action of Sulphate of Quinia upon the Temperature in Phthisis.*—Dr. OGLE, with the view of determining the influence of quinia upon the temperature in pulmonary phthisis, made a number of careful observations upon a young woman suffering from this disease, and under his care in St. George's Hospital. The conclusions deduced from his observations are as follows:—

1. The high temperature and its uniform range in a case of active phthisis, the temperature during observation prior to the exhibition of the large doses of quinia being never lower than 100° F., and occasionally 101°.

2. The promptitude with which (see date May 22d), on the exhibition of the ten-grain doses of quinia, the temperature sank to 99°, this range being maintained night and morning.

3. The same degree of temperature only being attained when the quinia was increased from ten- to fifteen-grain doses, except on one occasion (the morning of May 25th), when it fell to 98°.

4. The return of the high temperature on the disuse of the quinia, and even of a higher degree, as on three occasions it reached respectively 100.2°, 100.3°, and 100.4°.

5. The subsequent reduction of temperature to 99° on the quinia being given in twenty-grain doses night and morning, with only one or two exceptions, when it attained 100° and a little more.

During these fluctuations no proportionate modifications of respiration, of the pulse, or of the heart's beat, were found to exist.—*The Lancet*, July 6, 1872.

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10. *On the Influence of Belladonna on Sweating.*—Dr. SYDNEY RINGER communicates to *The Practitioner* (Aug. 1872) a short paper on the efficacy of belladonna, in ointment or liniment or hypodermically, in checking sweating, local or general. He was led to try the influence of belladonna on sweating from its remarkable action in checking the secretion of milk. He first employed it "in a case of unilateral sweating. A man, forty-five years old, had been troubled for many months with profuse sweating of the right side of the face and neck, breaking out on the slightest exertion or excitement, or when near a fire, so that the sweat ran down his face and neck in streams, soaking his collar and the band of his shirt, his face being neither red nor congested. The perspiration produced an abundant crop of miliarial vesicles, which were strictly limited to one half of his face. The liniment of belladonna applied two or three times a day abated this copious sweating considerably, and reduced it to a little

more than the natural amount, and this improvement lasted about six months after the discontinuance of the application, and then the sweating gradually returned, till it became as bad as ever.

"The writer has many times checked the sweating of the head and face of young children, often so profuse as to soak their hair and the pillow on which they have been sleeping. Again, by means of the belladonna ointment or liniment rubbed in two or three times a day, he has several times checked the profuse sweating of the hands, which is sometimes so copious as to run off them in drops, and is especially noticeable at the finger tips and thumb-balls. Sometimes the good effects are permanent, sometimes the sweating may not return for a considerable time; but occasionally, however, this treatment fails."

11. *Amount of Caffein in Coffee, and its Action on the Body.*—Dr. AUBERT, in an essay in part xii. of *Pflüger's Archiv*, states, that, though it is well known that coffee-berries and tea-leaves contain the same very poisonous alkaloid, caffein or thein, no researches have been undertaken to show how much caffein is contained in an ordinary cup of coffee. It is also an open question whether the coffee-berries should be lightly or strongly roasted, though it appears that experience has taught mankind the mode of preparation by which the largest quantity of the alkaloid is best extracted. Dr. Aubert has made a series of researches on these points in conjunction with Dr. Haase. Dr. Aubert's mode of determining the amount of caffein present in any given specimen is based upon its great solubility in chloroform, and especially in hot chloroform, whilst most of the other constituents of the berry are insoluble in it. His results show the presence of a larger amount of caffein than that given by most other experimenters, with the exception of Graham, Stenhouse, and Campbell, with whose analyses his own nearly coincide. The quantity he and they obtained is about 8 or 9 per cent. Aubert thinks that a cup of coffee prepared from about one ounce of coffee contains from four to five grains of caffein. His experiments on the effects of various degrees of roasting show that there is little caffein lost even when the coffee-berries are roasted black; in this respect he is in antagonism with Liebig. He obtains from the best Pekoe tea from 2.149 to 2.423 per cent. of caffein, the greater portion of which is extracted by the simple process of infusion.

As regards the physiological action of caffein he coincides with previous experimenters in considering that it causes increased reflex excitability and tetanus, the action resembling that of strychnia. If, however, one sciatic nerve be divided before the poisoning, that limb is not convulsed; hence it acts on the nerve centres. A frog is tetanized by the subcutaneous injection of a quantity not exceeding 0.005 of a gramme. 0.120 of a gramme injected into the jugular of a rabbit tetanizes it, and a cat or dog is tetanized by 0.2 of a gramme. It is remarkable that by maintaining artificial respiration for some time the symptoms of tetanus entirely disappear. Its action on the heart of mammals is that it causes acceleration of the beats, with diminution of the blood-pressure; this last effect he attributes to the poison paralyzing the ganglionic nerves of the heart.—*Lancet*, July 20, 1872.

## MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

12. *Connection between Pulmonary Hemorrhage and Phthisis.*—In a paper contributed by Dr. Julius Sommerbrodt, of Breslau, to the June number of *Virchow's Archives*, the question whether the extravasation of blood into the air-cells of the lungs is ever the cause of consumption is very fully discussed. Numerous experiments were made by injecting blood taken from their own bodies into the tracheæ of dogs; the animals being killed at periods of time varying from one hour to twelve days after the operation. In those soonest

killed the blood was found to have penetrated into different parts of the lungs, but was accumulated in greatest quantity near the roots. At the end of the first day, the injected patch could be readily distinguished from the other portions of the lung by a well-defined difference in color, which, however, became fainter on the third day, and generally ceased to exist on the eighth day. In no case were fibrinous coagula found obstructing the bronchial tubes. In dogs killed in from two to three hours after the experiment, the microscope showed the presence in the alveoli, containing blood, of some pale cells, two or three times as large as the blood-corpuscles, and having a nucleus and opaque somewhat granular contents. Twenty-four hours later, these cells, which varied in size from 0.006 to 0.015 mm., had become more numerous; their nucleus was less distinct, and their contents were more opaque. The cells continued to increase in number until the fifth day, when they also attained their maximum size (0.021 to 0.024 mm.). Occasionally, Dr. Sommerbrodt has discovered within them corpuscular elements, which he has no doubt are blood corpuscles, not only because they resemble the corpuscles, lying free in the alveoli, but also because they are not stained by carmine as are the nucleus and nucleolus. He thinks, therefore, that they have penetrated into these cells. In animals killed after the seventh day, the cells were found to have become less round, to have a tendency to become crenated and more opaque, and to decrease in numbers. Dr. Sommerbrodt has no doubt that these cells take their origin from the walls of the alveoli, and has been able not only to trace the gradations from the healthy cell to those just described, but also to detect the points from which they have been thrown off. These appearances he attributes to catarrhal pneumonia, and he therefore asserts that blood is capable of exciting this form of inflammation; but, having never been able to discover thrombi in the minute bronchial tubes, he rejects the explanation of Niemeyer, believing that blood exercises a directly irritating effect upon the alveoli.—*Brit. Med. Journ.*, Sept. 7, 1872.

13. *Crystals in the Sputum in Bronchial Asthma.* By Prof. E. LEYDEN, of Königsberg, and Dr. E. SALKOWSKI.—The observations contained in this paper are based on four cases of bronchial or nervous asthma, of which the details are given, and two others are added in an appendix, having come under the observation of the author while the original paper was in the hands of the printer. The four original cases agreed in their symptoms in a marked degree. The patients were all young, strong, and otherwise healthy; the asthmatic attacks were characterized by a feeling of want of breath, with difficult loudly-whoezing respiration and a short cough; the attacks continued for hours or days, and disappeared suddenly without leaving behind any ill effects. The lungs were healthy to physical examination, and the attacks appeared free from danger to life. In all the cases the expectoration; characters, it was scarce during the attack, but richer after; it was generally tough, of a grayish-white colour, holding a number of fibres, flocculi, and masses suspended in a transparent basis. Some of these suspended masses appeared as roundish plugs or thread-like processes, drier than the rest and of a firmer consistence. Under the microscope these were seen to consist of closely packed round cells filled with dark granules, and in the midst of them a number of delicate crystals. The crystals were colourless, with a dull soft lustre, and had regularly the form of very pointed octahedra. The cells in these masses were generally somewhat destroyed, and the substance between them granular, the granules presenting molecular motion, but there was no appearance of spores or fungi. In addition to these peculiar masses, the sputum contained numerous other flocculi, consisting of pus corpuscles and epithelium. Crystals of a similar character have been observed at various times in different parts of the body; in the spleen and blood of leucæmic patients; in the substance of a mucous tumour (myxoma) of the optic nerve; in the sputum in a case of croupous bronchitis with asthmatic attacks, etc. Also in their chemical reactions, these crystals resemble those previously observed, especially by Neumann, in leucæmic blood, and in the medulla of bone; they dissolved readily in acids, alkalies, and water, but were insoluble in ether.



Looking to their clinical aspects, the cases described are to be set down as cases of co-called bronchial asthma. By some the asthmatic attacks have been looked on as merely the symptoms of a catarrh of the bronchial tubes (*Catarrhe sec of Robin*). But most are now of opinion that the attacks are caused by spasm of the circular muscles of the minute bronchi, the contraction of these muscles narrowing the tubes, and interfering with the admission of air. The author believes that this is the proximate cause of the attacks, but the question remains as to the cause of this spasm of the muscles. Does it depend on an affection of the central nervous system (*asthma nervosum*)? Or is it reflex, arising from a catarrh or other condition of the tubes? The author having discovered the existence of these crystals in the cases observed by him, believes that they are to be looked on as the excitors of the reflex action. Looking to the formation of similar crystals in leucæmic blood after death, it seems probable that in asthma, owing to some peculiarity, there is formed in the alveoli or minute bronchi, a substance which deposits these crystals, and that these, by their mechanical (pointed) character, and perhaps from their chemical nature, irritate and so produce the attacks. In respect to treatment, the author observes that in this disease the ordinary treatment of bronchial catarrh is useless; he gives narcotics with good effect, opium, morphia, belladonna, stramonium, chloral hydrate, during the attack. To meet the disease itself, he uses bromide and iodide of potassium. Looking to the very ready solubility of the crystals in alkalies, he has used inhalation of chloride and carbonate of sodium with good effect in some cases.—*Glasgow Med. Journ.*, August, 1872, from *Virchow's Archiv*, March, 1872.

14. *Cold-water Treatment of Typhoid Fever*.—Dr. E. SCHOLZ, it is stated (*Deutsches Archiv f. Klin. Med.* ix.), since the year 1868, when he introduced the cold-water treatment of typhoid fever into the Bremen Hospital, has treated 125 patients—82 men and 43 females—the majority of whom were aged between 15 and 30 years. Of these cases, five, or about four per cent., terminated fatally. The temperature of the cold baths into which the patients were immersed varied from 8° to 16° R., according to the season of the year, and according as the medium temperature of the patient's body throughout the day exceeded or fell short of 39° C. In severe cases, in addition to the cold bath, cold applications were made to the chest, and over the abdomen. The leading circumstance which, according to Dr. Scholz, contraindicates the employment of cold baths, is the occurrence in any case of intestinal hemorrhage, because of the necessity of the patient being then kept in perfect quietude; but even in such cases the application alone of ice to the abdomen will be found beneficial, and may be continued until the debilitating effects from the loss of blood are recovered from. It may also be remarked that the cold bath is inadmissible in those rare cases where the fever attacks individuals of broken-down constitutions, drunkards especially, and the temperature of whose bodies continues depressed, seldom rising to 39° C. Dr. Scholz relates a case of this kind, in a girl 19 years old, who was destroyed by the cold bath. She was affected with emphysema of the lungs.

The statements of Dr. Scholz as to the beneficial soothing influence of the cold-water treatment in typhoid fever upon the functional nervous centres, and upon the digestive and cutaneous systems, are fully borne out by the history of the cases that were subjected to it. It is said by Dr. Scholz, that of five cases attended with intestinal hemorrhage in which the remedy employed was the *liq. ferri sesquisulph.*, only one terminated fatally. In some severe cases of the fever, occurring mostly in delicate females, on the eighth or tenth day of convalescence there was experienced severe dental hyperæsthesia.—*Centralblatt f. d. Med. Wissenschaften*, February 24, 1872. D. F. C.

15. *Cold Water in the Treatment of Abdominal Typhus in the Royal Julius Hospital at Würzburg, during the years 1870-71*.—Dr. F. RIEGEL states in the (*Deutsche Archiv f. Klin. Med.*, ix., 1871), that the cold-water treatment of abdominal typhus was marked by considerable mildness. The temperature of the "half baths" which were employed, was 20 R., hence the patients were

enabled to remain in them for ten minutes at a time, without experiencing any especial inconvenience. They would often, as they lay in them, take a shower bath of cold water. These baths were continued until a temperature of  $39.5^{\circ}$  was attained. In the intervals between the baths, cold compresses were applied over the abdomen. These were found to be preferable to bladders filled with ice, the latter, from the powerful impression they made, caused immediately an extreme contraction of the peripheral bloodvessels, so that the cooling effect caused by the diminished circulation at the surface of the body was, it is probable, productive of injury rather than of good.

Of one hundred and fifty-six typhoid patients treated during the years 1870-71, in the hospital—including only the well-marked severe cases—only seven proved fatal; while in former years, before the adoption of the cold-water treatment, in the same hospital, the mortality among the typhoid cases reached 20 per cent.

It was observed by Jurgensen and Hagenback, so, also, by Dr. Riegel, that in his typhoid patients, very often there occurred a severe burning pain in the soles of the feet, so that there appeared to be a connection between this symptom and the cold water treatment. Intestinal hemorrhage was of less frequent occurrence than under the former expectant treatment. It is here, perhaps, that is shown the beneficial action of this mode of treatment.—*Centralblatt f. d. Med. Wissenschaften*, No. 27, 1872. D. F. C.

16. *Variola and Typhus Fever occurring at the same time, in the same Individual, and running their Course together.*—In the *Berliner Klin. Wochenschr.*, 1872, No. 11, Dr. TH. SIMON states that an individual labouring under a recent slight attack of smallpox, was admitted as a patient into the Hamburg Hospital. Shortly after his reception there were developed in him the premonitory symptoms—intumescence of spleen, disturbance of sensorium, and the peculiar aspect of the stools—of fever evidently of the typhus type. During the desiccation of the pustules, there made its appearance a very copious eruption of roseola. The case terminated favourably.

Dr. Simon took opportunity to state that he had, during the prevalence of the variolous epidemic in Hamburg, frequently witnessed the early and widespread prevalence, among typhus patients, of a roseolar eruption, most probably the result of an influence exercised by the presence of the variolous epidemic.—*Centralblatt f. d. Med. Wissenschaften*, May 18, 1872, from *Berliner Klin. Wochenschr.*, 1872, No. 11. D. F. C.

17. *Bromide of Potassium in Epilepsy.*—Dr. LEGRAND DU SAULLE has published the results of the administration of bromide of potassium in two hundred and seven cases of epilepsy. Headache, gastric disturbance, disturbance of sensation, and other troublesome symptoms, have been described as following the use of the remedy; but these he has not found to occur when the drug has been pure. When the quantity taken daily reaches 4 grammes, the reflex sensibility of the fauces, epiglottis, and root of the tongue, and the sensibility of the generative organs, are diminished. Acne then also appears; which is not, however, as has been represented, of critical importance. Dr. Legrand du Saule commences with a gramme and a half or two grammes daily, and increases the dose gradually to 6 or 9 grammes a day: in one case, in the course of twenty-six months, the increase was to  $14\frac{1}{2}$  grammes daily. In men, no result may be observed till the daily dose reaches 4 or 5 grammes; in women, 3 or  $4\frac{1}{2}$  grammes daily will sometimes produce distinct effects. Of 207 epileptic patients treated with bromide of potassium, all symptoms of epilepsy ceased in 17, who were under observation during three or four years; 28 remained free from one to two years; in 33 there was marked improvement; in 19 the intervals between the attacks were increased, and these were less severe; in 110 there was no result. Dr. Legrand considers that it is not safe to entirely omit the use of the bromide, even when there has been no epileptic attack for a year. The patients, however, must be watched; for, under the prolonged use of the bromide, mental disturbance, stupor, confusion of ideas, impotence, and acne, are apt to set in. The last-named affection has sometimes disappeared

under the use of arsenic simultaneously with the bromide of potassium.—*British Medical Journal*, August 3, 1872, from *Gazette des Hôpitaux*, Nos. 21 and 22, 1872.

18. *Lactic Acid Treatment of Diabetes*.—Two papers on this subject, one by Dr. BALTHAZAR FOSTER, the other by Dr. JOHN W. OGLE, were read before the British Medical Association at its recent meeting. Dr. Foster, in his paper, called attention to the low temperature which he had observed in diabetes, and the bearing which this had on the respiratory theory of the disease. By means of diagrams, the daily excretion of sugar and water, the specific gravity of the urine, and the body-weight of each patient were represented graphically, under ordinary diet, animal diet, and under treatment by lactic acid. An analysis of the diagrams showed that under the acid treatment the quantity of urinary water was notably diminished, and in a less degree the daily amount of sugar excreted. The specific gravity of the urine was less affected. The bodily temperature rose under the use of lactic acid, and the functions of the skin were restored. Dr. Foster also observed that the acid exercised a favourable influence on the lung-complications in some cases.

Dr. Ogle, in his communication, described several cases of saccharine diabetes, in which he had, in addition to the use of a non-amylaceous diet, used lactic acid in considerable quantities. The details and results of some of these had been already mentioned in some of the weekly periodicals; and Dr. Ogle now brought before the Section the particulars of two cases which had recently been under his care at St. George's Hospital, and of which daily notes, with registration of amount of urine and its specific gravity, of the weight and sometimes temperature of the body, had been carefully noted. The two cases were admitted into hospital on the same day—one being a male aged 20; the other a female aged 28. In both cases meat, and non-amylaceous vegetables, with gluten-bread, etc., were given for several days, without the administration of any remedies. In the case of the woman, who was treated for eleven weeks before the lactic acid was given, the urine ranged in quantity between 112 and 178 ounces per diem; after the use of the acid the quantity quickly sank, and throughout its use fluctuated between 40 and 70 ounces daily, one day being as low as 30 ounces. During the whole of this time the specific gravity remained much the same as when the patient came to the hospital. In the case of the man, who was treated for seven weeks, under the lactic acid treatment, no marked diminution of urine and no change in the specific gravity was observed; but, after its long-continued use, whether owing to it or not was doubtful, great constipation came on, requiring active aperients. As regarded the weight of the body, in both cases during treatment it fell; in the man from 8 st. 5 lbs. to 7 st. 7 lbs., in the woman from 7 st. 3 lbs. to 6 st. 8 lbs. In the case of the man the temperature was chiefly above the normal, on one occasion only being below, and then it was 97.4—on one occasion reaching 102.8. In the woman it was almost always below the normal, mostly being below 98. In both cases the morning and evening temperatures were often taken, but neither one nor the other was uniformly below or above the other. In both cases the lactic acid was increased until four drachms were taken in the day, and this was persisted in for several weeks. In neither case were any sting-like pains, rheumatic or other, complained of during the entire treatment, and in neither was any noticeable perspiration produced. In both cases the sweet and hay-like smell of the breath existed. In neither case was there any indication of interference with or affection of the nervous system; power of movement of the entire muscular system, and sensibility, both general and of particular organs, were entire throughout. The uvula, palate, and pupils were natural. In neither case was there albumen or uric acid in the urine; and in neither was there any decided lung-mischief manifest, though a degree of harshness of respiration was perceptible in the woman. Although in one case a decided diminution of the amount of urine without increase of specific gravity followed the use of the lactic acid, yet in both cases flesh and strength were lost, and Dr. Ogle did not think that these cases showed that any benefit arose from treatment.—*Brit. Med. Journ.*, August 24, 1872.

19. *Treatment of Diabetes.*—Dr. WM. RICHARDSON, who was himself a sufferer from this disease, effected a cure in himself, and subsequently in various patients under his care, by adopting a plan of which the following are the essential features: The employment of regular and steady exercise; ablution of the skin daily with soap and water; the use of a bath containing a tablespoonful of carbonate of soda twice in a week; exposure of the surface of the body as far as is practicable to the sunlight, and the continuous use of iron, which he uses in the form of tincture of the perchloride in four or five drop doses, with one or two drops of tincture of nux vomica and eight or ten grains of chlorate of potash three times daily. He is an advocate of a restricted diet; but when the plan of treatment which he suggests is carried out fully, he finds that a considerable amount of relaxation as regards food is not injurious. He regards the sudden adoption of a very restricted diet as likely to prove highly prejudicial. Dr. Richardson's present dietary is sufficiently liberal, and, besides meat, includes brown bread with plenty of fresh butter, macaroni, and rice, potatoes sparingly, and at all times a little dry fruit. Even a few glasses of champagne occasionally he does not find at all injurious.—*The Practitioner*, July, 1872, from *Dublin Journ. Med. Science*, April, 1872.

20. *Treatment of Rheumatic Gout by the aid of the Galvanic Battery.*—Dr. JULIUS ALTHAUS, in a paper read before the British Medical Association at its recent meeting, offered some remarks on the nature and pathology of rheumatic gout, which he likened to the atheromatous process in the internal tunic of the arteries occurring in old people, and which, he said, was one of those highly insidious and chronic inflammatory conditions characteristic of the period of involution and senile decay. After glancing at some results of recent microscopical research in the morbid anatomy of rheumatic gout, the usual treatment of this disease was criticized, and found to be open to improvement. The author had for the last six years, sought and found opportunities to use the constant current in such cases, and had been well satisfied with the results. It could not cure rheumatic gout; it could not prevent the patients from advancing in age, nor check altogether the process of involution and senile decay to which the system must in the end succumb; but it did good in the following ways. 1. It acted as a general tonic to the system, and improved all the most important functions of the body, if applied in a peculiar manner which was described in the paper. 2. It procured sleep, even in cases where opiates or chloral did not answer. 3. It relieved the pain. 4. If perseveringly applied, it reduced deformities. The author did not wish to imply that the use of internal remedies should be altogether eschewed in the treatment of this disease, as by thus acting we should only deprive ourselves of many chances to do good to our patients; but in the cases treated by him, he had given the first place to the constant current, and given medicines internally only for removing complications. He laid stress upon the necessity of persevering with the galvanic treatment for a considerable time, in order to do permanent good; and gave directions as to the way in which the treatment should be carried out.—*Brit. Med. Journ.*, August 24, 1872.

21. *Tubercular Meningitis.*—Dr. BIERBAUM terminates an elaborate paper on this disease with the following conclusions:—

"1. There is an hereditary predisposition to this. It is seldom confined to one case in the same family, several of the children, as a general rule, becoming subjects of it. The disposition may, however, be also acquired. 2. Such predisposition consists in the scrofulo-tubercular diathesis. There is no essential difference whether this diathesis makes itself known by altogether indubitable symptoms or only shows itself by constitutional debility, which is nearly related to scrofulosis or tuberculosis, and leads to this disease. 3. It is nowise a necessary condition that the father or mother of the child should at an earlier period have been the subject of the disease. 4. The direct transmission of the scrofulo-tubercular diathesis from the parents to the children is of far greater etiological signification than the occurrence of the predisposition among collaterals. 5. Meningitis tuberculosa is peculiarly a disease of infancy, appearing far more

frequently during the first than the second dentition period. 6. The sex exerts no special influence on its frequency. 7. Whether the warm or cold season of the year most favours its occurrence is not decisively settled. 8. Climatic, social, and anti-hygienic conditions are only so far operative, as they influence the production of the scrofulo-tubercular diathesis. 9. This cerebral affection does not assume an epidemic character. 10. The exanthemata, and especially measles, are exciting causes of great importance. 11. Inflammatory affections of the respiratory organs more seldom give rise to this disease than pertussis. 12. In the abdomen lies a fertile source of many exciting conditions."—*Med. Times and Gazette*, August 17, 1872, from *Journal für Kinderkrankheiten*, No. 12, 1871.

22. *Erectile Tumour of the Intestinal Canal*.—M. LABOULBÈNE, one of the candidates at the Académie de Médecine for the vacancy in the section of pathological anatomy, was fortunate enough, in the paper which it is customary to read announcing his pretensions, to be able to lay before the Academy, at its meeting on the 4th inst., an account of what he believed to be an entirely new fact in pathological anatomy—viz., the occurrence of erectile tumours in the alimentary canal. A patient, aged 74, having vomited blood and passed it by the anus, it was diagnosed, after a careful examination, that he was suffering from ulceration of the duodenum. He died in the course of some hours, presenting the signs of internal hemorrhage. A most careful autopsy showed that almost all the organs were in a state of complete integrity, considering the age of the person. In the duodenum, however, a little lower than the orifices of the bile and pancreatic ducts, was found an oblong tumour the size of an almond, its projection being very visible when the blood which filled the duodenum had been washed out. Examined under water, the mucuous membrane which covered the tumour presented a small, irregular ulceration, whence the recent discharge of blood had evidently issued. Two other blackish points seemed to indicate former orifices, which had undergone repair. On cutting through the tumour it was found to have invaded the entire substance of the mucous membrane, the muscular fibres and peritoneal coat being still recognizable. The mass consisted of capillary vessels of various sizes, which were dilated at several points, the dilatations being either uniform or only lateral. M. Laboulbène regards the tumour, in fact, as being precisely similar to erectile tumours met with on the surface of the body. Similar tumours, hitherto unobserved in this locality, may have given rise to fatal intestinal hemorrhages, the causes of which have remained unknown.—*Med. Times and Gazette*, June 29, 1872.

23. *General Bony Metamorphosis*.—MR. EDWARD HAMILTON exhibited to the Pathological Society of Dublin, March 16, 1872, a remarkable specimen of morbid deposition of bone. Of the patient, a woman about 30 years old, no satisfactory clinical history existed; she had apparently been of a rickety constitution. After death, the thyroid body was found large and congested; the lungs were congested, the left lung being reduced in size. The vascular system was healthy, with the exception of a few specks of atheromatous deposit in the aorta. The abdominal viscera were generally healthy. The skeleton, which Mr. Hamilton exhibited, had undergone extraordinary changes. The upper part of the skull was normal; and no bony deposit had taken place in the meninges of the brain. The temporal muscles were atrophied, chiefly from disuse. The lower jaw was entirely ankylosed; and a ridge of bone ran perpendicularly down from the left zygoma. The patient had fed herself through a space formed by the loss of some front teeth. The head was firmly fastened to the cervical vertebrae. The spinal column was curved like the letter S. On the left side a mass of bone had formed in the areolar tissue between the pectoral muscles; and on the right side, in the same situation, a mass of bone bound together the humerus, the coracoid and acromion processes of the scapula, and the ribs. The pelvis was large and oblique. Massive stalactiform bony processes connected the ilium, trochanter, and femur, on each side. The bones of the legs were comparatively free from disease. The ankle-joints were stiff, and the plantar ligaments were extensively ossified. The erector spinæ muscles were

changed into enormous plates of bone running down to the crest of the ilium. The latissimi dorsi had also become metamorphosed, and a ridge ran from the occiput to the left scapula. The whole body had an inclination to the left side; and the left thorax was contracted. Mr. Hamilton suggested that Nature, in endeavouring to compensate for a rickety tendency, had acted too energetically, and that an excess of bony deposit had thus occurred. The microscopical examination of the abnormal formation showed the Haversian system of true bone. Dr. E. H. BENNETT, in presenting a cast which illustrated similar ossific metamorphosis of tissue, referred to the history of William Clarke, who was born in the county Cork, in 1677, and lived to the age of nearly 67. The skeleton of this man, which has been in the possession of the University of Dublin for more than one hundred years, was shown by Dr. Bennett. It presented characters almost identical with those of Dr. Hamilton's case. Particulars of the history of Clarke were to be found in the *Philosophical Transactions* for 1740, and in the second volume of Smith's *History of the City and County of Cork*. In the latter account, the man's posture some time before death is rather quaintly described, as being "somewhat like that of the Venus of Medicis;" and the author, after giving a very accurate account of the abnormal bony formation, proceeds to say that "it would require a volume of itself, composed of a new kind of osteology, to give a minute description of this surprising skeleton and its irregularities—being as difficult a task as to describe Calypso's grotto." The cast shown by Dr. Bennett was of the back of a healthy girl, aged 11, one of a family of seven healthy children, in none of whom was there any history of rickets. While she was still at the breast, a tumour began to show itself at the inner and upper extremity of the right scapula. Subsequently, a plate of bone became developed from the right ilium to the scapula. The jaw was still free, but the bony growth was slowly but surely advancing.—*Brit. Med. Journ.*, June 1, 1872.

24. *Ichthyosis treated by Sulphate of Copper*.—Dr. DUMESNIL reports (*Repert. de Pharmacie*) a case of ichthyosis of the nose, which had resisted various remedies, internal and external. Dr. D. then prescribed an ointment of four parts of sulphate of copper in thirty parts of benzoated lard, under the use of which the cutaneous affection disappeared in about three weeks. It returned, however, a month later, when the same application was resumed and persisted in, and the patient continued free from the disease up to the date of the report, two years after the remedy was first used.—*Journ. Med. de Bruxelles*, May, 1872.

25. *Root of Abroma Augustum in Dysmenorrhœa*.—Dr. БНООВУН МОНУХ SINGAR extols the efficacy of this article in dysmenorrhœa, and says he has employed it for some twelve years, in upwards of five hundred cases, with the most beneficial results.

This plant, called in India Olutkombol, belongs to the natural order Bythneriaceæ. It grows to be a handsome small tree, having simple alternate palmately divided hairy leaves, and beautiful showy purple flowers, drooping on long peduncles; sepals five, united at the base, having an epicalyx; petals, same in number as sepals. Stamens not columnar, and united to the claws of the petals; two-celled introrse anthers and smooth pollen. Fruit is a capsule, composed of a few carpels, containing numerous black seeds; bark tough and fibrous; roots slender, and numerously branched. It is a tropical plant, and abounds in various parts of India. The officinal part of the plant is the root. The roots are covered with thick easily separable bark; within the bark is a thick, viscid, tenacious, white fluid, which seems to be the active principle.

*Use*.—When administered during the menstrual period, the patient, if suffering from dysmenorrhœa, is relieved from the pain, and usually no catamenia appears during the following month, consequently there is no recurrence of pain. Sometimes the menses do appear on the next catamenial period, but are not attended with pain. In young married women, the cessation of the menses, and consequent non-occurrence of pain, are followed by conception. When one administration of the drug fails, it should be repeated; young women under twenty years of age seem to be specially benefited by its use. The curative action of this

medicine is seldom ineffectual in the neuralgic and congestive forms of dysmenorrhœa, or the modifications of both these forms; but it is of no use in the mechanical form of the disease. Slender fresh roots, from the size of a swan-quill downwards, should be preferred. ʒss to ʒij of the root should be well rubbed up with eight or nine black peppers in a little water, and should be taken in the morning on an empty stomach. This dose should be repeated for seven days successively, commencing from two days before the appearance of the menses, and continuing until two days after their cessation, that is to say, two days before the appearance of the menses, three days during the flow, and two days after their cessation, making altogether seven days. In case of missing the two premenstrual days, the medicine can be taken on the first day of the appearance of the menses, and continued for seven days, with equally good results.—*The Indian Med. Gaz.*, July 1, 1872.

26. *Elimination Theory of the Cure of Diseases.*—Dr. F. E. ANSTIE in several papers (*The Practitioner*, vol. viii, pp. 161, 289, 356) has investigated the action of the organism when poisoned with narcotic doses of alcohol, and its behaviour in presence of mineral poisons, and in neither case has he found the least reason to believe that there was such an escape of the poisonous matters as could produce any considerable remediable effect. In the No. of the same Journal, for August, of the present year, he examines a different class of poisons, the alkaloids, in order to see whether they, by their manner of elimination, afford any analogical support to the theory of Nature's cure of diseases by expulsion of morbid matters from the body; and arrives at the conclusion, that the results of his researches lend no support whatever to the idea that preservative design is the basis of alkaloidal elimination. "Here, as before, we are only able to recognize the ordinary physical phenomena of endosmose and exosmose, and mechanical circulation by diffusion, supplemented of course by the action of the heart, which pumps the blood into the ramifications of the arterial and capillary systems."

## SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

27. *Treatment of Aneurism.*—Mr. OLIVER PEMBERTON, Professor of Surgery in Queen's College, Birmingham, in his address on Surgery before the British Medical Association at its recent meeting, called attention to some most interesting points connected with the treatment of Aneurism and read the following interesting and very instructive remarks:—

"Professor Lister's improvement in the Hunterian operation, by which the permanent closure of the artery at the spot tied can be insured, without dividing the coats of the vessel, at once effects a complete change in some of the most important conclusions that for long years have guided us in our treatment of aneurism. One of the greatest dangers attending the Hunterian operation has hitherto been considered to be the application of the ligature immediately beyond any considerable branch of an artery. This impression has deterred surgeons from applying a ligature to that portion of the artery which otherwise would have seemed to them best adapted for the purpose. That an abiding coagulum will form under certain circumstances in the vicinity of almost any number of branches on the proximal side of a ligature, I am perfectly satisfied; but the attainment of this success in many cases depends on a fact which it is almost impossible for the surgeon to estimate beforehand; that is, the facility with which the blood will coagulate or deposit its fibrin in any particular instance. In the case I am about to relate, the existence of this tendency, in a much greater degree than usual, was the main cause of the success of the operation.

"In June, 1870, I saw F., aged 60, strumous from childhood, and highly intel-

lectual. There was an aneurism, three months old, of the left superficial femoral artery, about five inches below Poupart's ligament. There were marked indications of general arterial disease, and, during the past twelve months, of semi-paralytic seizures, evidently due to temporary hindrance to the cerebral circulation. Pressure failed, and was abandoned at the end of three months. I then advised ligature—the aneurism rapidly increasing. On October 12th, the aneurism having 'leaked' the previous day, in the presence and with the sanction of Sir James Paget, I tied the common femoral with a hempen ligature. Fearing, from the diseased state of his arteries, the worst results, as the ligature might be thrown off, the wound was left completely open, being simply covered for protection. In forty days the ligature came away, and the patient died a week afterwards, from causes wholly removed from aneurism. There was no hemorrhage, but gangrene may be said to have commenced in one toe. When I came to dissect the arteries I found the circumflex ilii, epigastric, and the profunda femoris given off together, that is at opposite points of a line drawn round the main trunk, a little above Poupart's ligament, the point of ligature being five-eighths of an inch below these vessels, the part of artery intervening being firmly plugged. The profunda was pervious for some distance and then plugged. There were plugs of former date in the right and left carotids and in the left axillary arteries. The aneurismal sac was filled by broken down clot and fluid blood, and would have suppurated.

"Now I cannot consider this case as any contribution to the surgery of the common femoral, though I hoped and expected it would be so; for I think hardly any doubt can be entertained that the patient would have died from secondary hemorrhage on the separation of the ligature, had it not been for the unusual tendency of the blood to coagulate, for nothing could well be closer than those three vessels were to its site. At the same time I think, with Porter and Macnamara (*On Ligature of Common Femoral, British Medical Journal*, II., 1867, p. 285), that the exclusion of the common femoral, on account of the assumed liability to secondary hemorrhage and gangrene that follows its ligation, is not founded on any solid basis. It was selected in this instance in preference to the external iliac, and I should so select it again; of course, on the presumption that I was going to place my ligature in the vicinity only of such branches as the epigastric and circumflex ilii: in the presence of which I feel satisfied that an adequate coagulum may, under ordinarily favourable circumstances, be reasonably expected to form.

"It is rather here then I draw your particular attention to this feature of coagulation. For I ask myself this question: If I had tied the artery—complicated as its irregularity was in this instance—with a hempen ligature, and there had not existed this tendency, would it have held? Assuredly not. This same tendency to coagulation, as manifested in the collateral vessels, whilst it preserved the patient's life, would, I may observe, have subsequently caused his death by gangrene. Further, it appears to me that in proportion as the coats of the arteries deviate from their natural state, and as the general vital conditions are lowered, so is this tendency increased.

"Surgically speaking, then, this very circumstance of diseased arteries and tendency to blood-coagulation, in some cases, establishes a reason why the surgeon should not refrain from operating where the diseased condition of the coats of the arteries alone would lead him to abstain from interference. And it is clearly of the utmost importance to increase this tendency to the coagulation of the blood as much as possible, after all operations for aneurism, by good diet, and by the absence of all depressing remedial agents.

"Apart from this question of coagulation, I feel warranted in expressing my conviction that too much stress has been laid on the disturbing influence of a large branch or branches taking origin close to the part of the vessel tied. If, however, we are to believe the teaching of Professor Lister (*Observations on Ligature of Arteries*. Edinburgh: 1869), it will be of little moment in the future whether a plug form on either the proximal or distal side of the ligature at all, so long as the 'prepared catgut' insures permanent closure of the vessel at the spot tied, without severance of the coats, and, consequently, without liability to secondary hemorrhage.



"From what I have seen since this case came under my notice, I am glad, before such a meeting, to be able to express my unbounded admiration of and confidence in the use of the animal ligature, as placed before us by Professor Lister. If the so-called 'antiseptic system' has effected no more for surgery than to give us the means of effectually closing an artery without cutting it through, and without suppuration, it has in doing this placed the crowning glory on the treatment of aneurism, for which it has waited since the time of Hunter.

"For forty days I watched patiently for the detachment of this ligature with an open wound to escape deep-seated suppuration. I watched twenty-one days in a case last May, in which I tied the external iliac for aneurism at Poupert's ligament; and though the case did perfectly well, the suppuration about the track of the hempen cord gave me the greatest anxiety.

"Last August, Mr. Lund, at Manchester, tied the same artery with a catgut ligature. No pus was secreted; the wound healed on the eighth day.

"Professor Lister remarks that ligature of the innominate must yet prove, with these means at command, 'a very safe procedure.' Yes; but always, I presume, provided that the coats of the artery are healthy where the ligature is applied; and on this we await further evidence: given this, and I feel inclined to echo the assurance.

"I shall now endeavour to show that the principles of treatment in the methods of flexion, compression of the sac, manipulation, are one and the same.

"The method of flexion can only be applicable to certain arteries. All that it is needful to do is to keep the limb flexed, not continuously, but to such an extent as to alter the relations between the orifices of ingress and egress, and the fibrinous laminae of the sac. Some of these laminae become, as it were, dislocated, and protrude more or less into the stream when a fresh deposit of fibrin occurs, and so the cure is gradually effected.

"The exercise of pressure on the artery above the angle of flexion appears to be useless. What we want is a stream of blood flowing into the aneurism; that it should be more or less retarded there, and that there should be present something in the nature of a foreign body; for example, the fibrinous laminae, on which blood would coagulate and deposit its fibrine. This retardation of the blood in the sac can be effected by a gentle compression of the artery on the distal side of the aneurism; as I strongly hold that what we want in these cases is a deposition of fibrin rather than a coagulation of blood. For, surely, the slow deposition, layer after layer, of solid fibrin in the sac, until the filling-in is complete, is a surer guarantee against subsequent mishaps than if it were closed by a mass of suddenly coagulated blood.

"I place before you the case of K., a Lascar, 22, who came under my care May 10, 1859, having an aneurism of the left popliteal artery of four months' duration. Flexion was maintained for seventy-two hours, with the result of the aneurism ceasing to pulsate, and becoming solid in eleven hours. Compression, during the first forty-eight hours, of moderate character was also made by Weiss's instrument on the artery in Scarpa's space.

"I believe that this was the first instance on record in which the combination of compression and flexion was made use of; and the case was published very fully at the time in the *Lancet*. But I feel satisfied now, in reviewing it, that pressure below the sac would have proved more advantageous than above.

"If one wanted convincing of the very slight means whereby important curative changes may be brought about in aneurismal sacs, I have but to ask a consideration of the facts connected with the following cure, in thirty-nine hours, of a popliteal aneurism.

"M., 28, a porter, came under my care on the 17th January, 1871, with an aneurism of the right popliteal artery five months old. On the 22d, I showed the patient how I proposed to treat him—by flexion—at the same time bandaging his leg, and arresting the circulation through the sac. It is very likely that the patient, in the afternoon, subsequently to my visit, imitated my proceeding, as he seemed very much struck by what I had done. Be this, however, as it may, I only bent the limb once, and fingered the sac lightly, and told him to keep quiet. At two A. M. on the 23d, he was seized with a sudden aching, shoot-

ing, gnawing pain in the neighbourhood of the aneurism, extending down the calf of the leg as far as the ankle, and upwards as far as the crest of the ilium. The pain continued very intense for some hours, during which he had no sleep. He had severe nausea, but no vomiting, and was chilly. The pulsation in the aneurism seemed unchanged, but he remained poorly all the day.

"On the 24th, he slept until three A. M., when he awoke and found that pulsation had ceased in the aneurism. The limb was cold below the knee, and cedematous; and though the pain of the previous day was better, it was not gone. On examining the aneurism it felt hard, and was free from pulsation. He was subsequently discharged cured.

"I am inclined to think that coagulation commenced here after the first flexion; that the deposit of coagulum, after a few hours, increased rapidly, as indicated by pain which culminated in intensity as the sac was solidified. There may have been a clot detached which plugged up either the proximal or the distal orifice; if so, it took place at the final exacerbation of pain, when pulsation ceased; for I certainly judged the contents, when I bent the limb, to be fluid.

"The verification of the intense pain that occurs, when the blood-current is forced suddenly into narrow collaterals, or at the supreme moment when the contents of the sac are solidified, was here very conspicuous.

"To ask, for a few minutes, the judgment of a skilled assembly, such as this, on the probability of applying pressure with success to the actual sac of an aneurism, would appear to be returning to the pre-Hunterian period; and yet had the theory by which aneurisms are cured now, been fully comprehended then, I can have little doubt that the necessary deposition of fibrin would have been brought about in many instances that otherwise signally failed.

"I entertain the opinion that compression of the sac ought to be used more frequently than it is now. The principle of this proceeding is exactly the same as flexion; we want simply to alter the relations of the laminated fibrin to the cavity of the aneurism, so as to bring about a further deposition of fibrin on the projecting surfaces of any of the displaced laminæ. The pressure need not be continuous. It should be very gentle. It need not, even, be distributed uniformly. But it must ever be borne in mind, that if it be carried to such an extent as to empty the sac, and to press one wall against the other, then a cure cannot occur. The very conditions under which a cure is possible are here ignored. Blood must pass through the sac. It must not pass through too rapidly; and I now think that this would be facilitated by gentle pressure being made on the artery below the aneurism.

"In March, 1857, I visited D., 67, an active sportsman and farmer. He had an aneurism, a month old, of the right external iliac artery, just above Poupard's ligament. It was somewhat fusiform in shape, measuring three inches in length, by one and a half in breadth. There was no bruit. I failed to arrest the circulation through the aneurism by making pressure on the artery above, but I found I could greatly limit the current by making pressures on the sac itself. The question of an operation being raised, I advised that, as a ligature could hardly be applied to a sound artery, other than in the course of the common iliac, and bearing in mind the vicinity of the bifurcation, no operation should now be performed; but that Dr. Carte's compressor, under careful management, should be applied to the sac itself. Accordingly under my directions two senior students (the late Mr. Dennis Moore, of Walsall, and Dr. Neal, of Birmingham) remained with the patient. The treatment extended over a period of six weeks. During the first fortnight, little good was effected. Then, for eight consecutive days pressure was applied, on an average of seven-and-a-half hours per day. The pressure effectually retarded the circulation—nothing more—and was never applied for more than three or four hours at a time. Consequently the patient was not wearied, and had undisturbed nights. There was now a complete interval of nine days, during which no pressure was applied, the aneurism being firmer and with less pulsation, and he was allowed to move about in his room. Then followed nine days of treatment, averaging six hours and a-half per day. From this time the aneurism ceased to pulsate, and the patient gradually resumed his ordinary avocations. He is yet living, in his eighty-third

year, active and well. In December last (letter from Mr. Earlam, of Abbots Bromley) the remains of the aneurism were represented by an indurated enlargement about the size of a chestnut.

"I venture to think that even Dr. Macnamara will give me credit for having studied O'Bryen Bellingham (*Observations on Aneurism*, London, 1847) to some purpose, who, happily for my patient, published his observations in the January of this very year.

"Reduce the force and volume of the blood-current by any carefully considered measures, and we follow out the reasoning of Brasdor and Wardrop in the distal ligature; a reasoning which is rendered amenable to treatment of internal aneurisms hitherto beyond surgery; a reasoning that has the authority of nature's own proceedings to recommend it, from the fact that it is more or less identical with the mode in which the so-called spontaneous cures are brought about.

"I own, this case—unique as it is in this situation—has always been in my mind, on the discovery of any fresh instance of aneurism. It serves to confirm the soundness of the remark, that in proportion as the true method of curing aneurisms has been fully understood—that is, the gradual lessening of the blood-current to final and complete coagulation in the sac—so have the means whereby this has been brought about, become simpler and more safe.

"The occurrence of these cases led me to the attentive consideration of the facts, as they are at present before us, connected with the purposed displacement of the contents of the sac of an aneurism, in the hope of plugging up either outlet: and the case of M. happened when a subclavian aneurism<sup>1</sup> was under my notice in another ward, about the treatment of which I was—to say the least of it—previously undecided.

"It seemed to me so impossible to limit the degree of force, short of extreme hazard, in the method originated by our distinguished *confère*, Sir William Fergusson (*Medico-Chirurgical Transactions*, vol. xi. 1857); and I was not reassured by perusing the cases which he has recorded, or those of Mr. Pollock (*Op. cit.* p. 45).

"I cannot but regard the treatment by manipulation to be based on exactly similar principles to those on which the methods I have just alluded to are founded. No forcible pressure to detach fibrinous laminæ, in my judgment, ought to be used; as the result would be the almost certain separation of small portions of the clots, which would be carried into the circulation, and would eventually plug the smaller vessels, causing symptoms according to the functions of the parts which the plugged vessels supply. For I must own I have not been able to see how these clots could be located at either outlet, to be fixed by arrangement, as it were, at a spot where it is simply impossible to be assured that they could effect a lodgment. All that is necessary is, that the aneurism should be gently manipulated, so that the laminæ of fibrin in its interior should occupy a different position to that which they had previously held with reference to the two orifices of the sac; and in order that the blood should not be allowed to pass out of the sac too freely, if I have an opportunity, I shall endeavour to compress the distal artery in accordance with the principles I have been advocating.

"B., 32, a former Lifeguardsman, was admitted into hospital October 20th, 1870, with aneurism of three months' duration, in the second and third parts of the right subclavian. It was as large as a hen's egg, and accompanied by bruit, and by dilatation of the axillary artery. He stayed a month, during which time iodide of potassium was freely given; and then, frightened at the idea of an operation, he suddenly left. On January 20th, 1871, he was admitted again. The aneurism seemed firmer, giving me the impression that fibrin had been deposited. From February 10th to 14th. the sac was manipulated, night and morning, for a few minutes. The proceeding was one of the utmost gentleness and regularity, and consisted in making pressure with the thumb and finger, so as to slightly approximate its fibrinous walls, and, whilst thus limiting the cir-

<sup>1</sup> Pollock records three cases of direct compression applied successfully to subclavian aneurisms.—*Guy's Reports*, vol. xvi. p. 63.

culation, probably rendering the clot surface somewhat irregular, and promoting the tendency to deposit already commenced. On the 11th, pulsation was much weaker. On the 14th, it ceased altogether. There was no brachial or radial pulse below the aneurism; and he complained of pain, extending downwards from the aneurism to the iliac region. This was constant, severe, and of a numbing character. There was no constitutional disturbance. During the following days the collateral circulation about the clavicle and shoulder developed itself; and especially noticeable was a large transversalis colli crossing over the aneurismal sac. On April 17th, he left for the Sanatorium, the sac being small and hard. Since this time he has pursued his business as a hawker, travelling all over England. I examined him, and so did my colleagues, as recently as the 19th of June, sixteen months after the cure of the aneurism, and I noted the following facts. A little induration marks the site of the aneurism; the axillary artery and upper part of brachial can be felt, cord-like, as far as insertion of coraco-brachialis—here pulsation begins, and can be felt, feebly, in the radial at the wrist. He is himself excessively thin, but well and hearty.

"The absence in this case of any symptoms of paralysis during the four days in which the sac was manipulated, justifies the inference that no clot at least passed into the cerebral circulation, and I entertain myself the conviction that the cure was brought about by a steady process of lamination, rather than by a detachment of a clot, happy enough to fit into either orifice of the aneurism.

"I have now to call your attention to what I believe to be a not uncommon result of the cure of aneurism, after it has been effected for some time; I mean the formation of varicose aneurism or aneurismal varix. I shall first relate two cases. In 1844, my late colleague, Mr. Amphlett, tied the superficial femoral for an aneurism of the artery as it enters Hunter's canal. The patient was aged 41, and a soldier. There was nothing unusual at the operation, and the ligature was thrown off on the nineteenth day. Ten days subsequently, there was arterial hemorrhage from the seat of ligature. This recurred in ten days, and a third time in fourteen. Pressure on the arch was used, and the patient recovered. He remained well for upwards of three years, when a tumour formed at the seat of operation, which was evidently an arterio-venous aneurism. With this, coming under the care of my colleague, Mr. Baker (our President), he died with a drunken pleurisy, just five years from the date of the operation. I was fortunate in being able to dissect his vessels. The femoral artery had formed an aneurism at the seat of the operation as large as a hen's egg, and the femoral vein communicated with the artery by a large opening. The former aneurism was cured, and the artery between it and the seat of ligature was impervious.

"M., 50, a soldier, syphilitic and intemperate, became the subject of an aneurism of the upper part of the right posterior tibial artery. Pressure was made over the artery on the pubic arch, for three weeks; on it, below, for nine months. The aneurism was cured. Ten months afterwards, an arterio-venous communication formed at the chief seat of pressure, and the patient died in about a year and eight months subsequently. I had the opportunity of minutely examining his body, and I came to the conclusion that pressure on the pubes induced varix in the femoral vein, at the situation of the saphenous opening; that this subsequently, sustaining pressure, enlarged and became adherent to the artery, and finally, by a succession of changes, readily comprehended, between a diseased artery and a diseased vein adherent to each other, ended in establishing an aneurismal varix.

"At the time when I published this case, which was done at considerable length in the *Medico-Chirurgical Transactions* for the year 1861, I attributed the results merely to the injurious effects of long-continued instrumental pressure, producing morbid changes around and between the contiguous vein and artery; and I was inclined to quarrel with Bellingham's remark (*Medico-Chirurgical Transactions*, p. 12), 'That no morbid change of any kind takes place in the artery or vein at the site of instrumental compression.' Subsequent reflection, however, and an attentive study of the preparations, have led me to seek a different explanation. Thus, in consequence of the diseased conditions and diminished elasticity of the arterial walls, which almost constantly exist in

all arteries above the seat of an aneurism, the velocity of the blood-movement is considerably retarded. It is evident that this retardation must be materially increased by the obstruction at the seat of ligature, or the seat of long-continued instrumental compression. The immediate consequence of this retarded velocity is an increase in lateral pressure. This dilates the diseased coats of the artery into an aneurism, which—by the usual processes of pressure, absorption and disintegration—opens into an adjoining vein. Sometimes, as in the second case I have adduced, the opening is effected directly into the vein without the previous formation of an aneurism—and the vein subsequently becomes varicose by the passage of arterial blood into it.”—*British Medical Journal*, August 10, 1872.

28. *Modern Treatment of the Advanced Stages of Constitutional Syphilis.*—Mr. Wm. Acton read the following paper before the Surgical Section of the British Medical Association, mainly with the view of eliciting from M. Ricord, who was present, a statement of his *present opinions* on the important question of the treatment of syphilis.

Mr. Acton remarked, “On what constitutes the virus of syphilis, I fear we know little more at present than we did thirty years ago. Experience, however, has corroborated M. Ricord’s observations, that relapses of constitutional syphilis are not uncommon even after long periods of apparently perfect convalescence. These accessions of disease we may attribute sometimes to neglect of treatment; but we must admit, likewise, peculiarities of constitution and temperament as bearing on the tendency, which, in spite of the best regulated treatment, will be followed by relapses. In other instances it is noticed that any general disease which will debilitate the system may be followed by an attack of constitutional syphilis, which without such debilitating cause would never have occurred. The old theories about the influence of *ferments* seems to be borne out by some of these exceptional cases.

“Practitioners, however, will agree with me that, in the present day, in some of these rebellious cases patients and medical men both lose confidence in remedies, and there are those among us who, after seeing such relapses, doubt if it be the effects of syphilis or mercury which we have to treat in these advanced cases.

“The *treatment* should consist in ameliorating the symptoms, commencing with those that are most urgent. We should attempt to improve the broken-down constitution, too often found in these instances; if mercury have been given, we must leave it off till the constitution has somewhat recovered. Our object should be to place the patient in the best possible condition as regards air, diet, and freedom from anxiety, and, if possible, to give him confidence that the disease is curable, for the moral and mental depression to which the patients are reduced is often very painful to witness.

“This being done, I commence with tonics and iodide of iron. If there be ulcers, I treat them with the ointment of nitric oxide of mercury. If the throat and voice be affected, topical applications must be used. If osseous or periosteal tumours exist, iodine or blisters should be applied to reduce the size of the swellings and prevent disfigurement, or pressure on the brain or spinal cord. This local and general treatment will act almost as by a charm in relieving sleeplessness and pain in the bones and joints.

“In the commencement, notwithstanding that iodine may have been taken (according to the statement of the patient) without previous benefit, I commence the syrup of iodide of iron in bitter infusion, taken at meal-time in moderate doses. As long as the remedy tells on the constitution, I adhere to moderate doses; but as soon as convalescence tarries or progress is not made, I increase the dose even to two drachms three times a day. When the system becomes tolerant of these doses, I change the syrup for the iodide of potassium in solution, beginning with ten or fifteen grain doses, taken at meals and dissolved in large quantities of fluid.

“The subsequent treatment should be guided not by the number of grains given, but by the effect which the remedy has on the complaint. As soon as the disease ceases to retrograde, I augment the dose with the best possible

effect. When the preparations of iodine and potash cease to benefit the best patient, I add bromide of potassium, not in combination with the iodide, but prescribe it at a different time of the day. It frequently happens that we succeed in curing the disease with these salts, but if the complaint be very persistent, if relapses occur after short intervals, I no longer hesitate to give mercury, and my hearers may be glad to learn what are the indications we follow in the administration of the remedy.

"*Treatment with Mercury.*—As a general rule, it must be admitted that mercury is not required in the treatment of the advanced stages of constitutional syphilis. In fact, we attempt to cure our patients without resorting to the mineral. On the other hand, there are many instances in which the recovery hangs fire; the patient ceases to improve even under large doses of iodine. The disease becomes stationary. Yet such are the objections of some practitioners to a course of mercury, that, in spite of the recrudescence of severe symptoms, the anti-mercurialist will not give mercury in any form. This is an error of the day. The rule which experience teaches us is that, if a relapse occur, or if the progress of recovery be arrested, after the various preparations of iodine have failed, some of the mercurial preparations must be had recourse to, judiciously given and closely watched. In some cases, friction with mercurial ointment will be most beneficial; and I must admit that in England I find the old plan of rubbing in mercury answer better than almost any other that I am acquainted with. There are those who employ fumigations. M. Ricord is very partial to a prescription combining biniodide of mercury, iodide of potassium, and sarsaparilla. In these stages, the writers of the last century had a high opinion of corrosive sublimate; but this irritant poison has fallen into disuse in modern practice. Those of my hearers who are acquainted with the writings of the older authors on syphilis need not be reminded of the almost miraculous recoveries detailed after giving mercury, long before iodine was known; and it is stated that the patient never had a relapse. These old writers, however, omitted to state how often the remedy not only failed, but brought the patient to an early and untimely grave. I can bring to my recollection many instances which, I have every reason to believe, died from the administration of mercury given on the old plan, and which would now be rescued by the mercury being preceded by the different preparations of iodine.

"If mercury be found beneficial, as I am sure it will be, if judiciously given and carefully watched, and the symptoms of syphilis subside, the preparation should be persisted in till every vestige of the disease disappears. The dose required is sometimes surprisingly small. I have known obstinate symptoms, which have withstood iodine, disappear in a week. In a case now under my care, of syphilitic nodules of the testis, a six weeks' course of frictions has been required to enable the testis to recover its former elastic feel, and its functions are now performed satisfactorily. It is singular to notice in these cases how the general health improves under mercury. The patient loses the habitual earthy expression, becomes florid, and gains flesh; his spirits improve as the local affection declines, and he ceases to be liable to relapses."—*Brit. Med. Journ.*, August 17, 1872.

29. *Treatment of Syphilis.*—The reading of the above paper drew from M. Ricord the following speech:—

"There is one question which comes before the medical man very frequently: Can syphilis be cured radically? That is the question which we will consider. There is an immense quantity of venereal disease cured—clap, swelling of the glands, soft chancres, warts—all these 'accidents,' not belonging to syphilis, and not associated with secondary symptoms, being radically cured. Since these have been distinguished from real syphilis, there have been great differences in the treatment of them, and they have been radically cured. Doubts have been raised whether real syphilis can be radically cured; and those doubts are not new. Mercurialis thought that it was liable, even after the lapse of years, to break out again; and the doubts remain in the minds of many whether it can be cured radically, or whether it can be cured only temporarily. Well, that doubt may remain until I establish before you that the law regarding syphilis

is the same as the law regarding the smallpox, measles, and such like. You can have at the one time only one smallpox, only one cowpox; and as, just so long as the cowpox influences the system, you cannot have another smallpox or another cowpox, so in syphilis; for, as long as the patient is suffering under the syphilitic diathesis arising from an indurated chancre, he cannot have another indurated chancre. The application of this law is that, while a man is suffering under the effects of secondary symptoms, he cannot have a chancre of an indurated character; so that if you want to know whether the system of a man is altogether free from syphilis, you can do so by inoculating him with an indurated chancre; if it take, he was free; if not, he was insusceptible. That is a great point to be reached in the science of medicine. I say, and say distinctly, that syphilis can be radically cured.

"Now as to the case of syphilis in the first stage—the primary sore. You have first to find if this be really the hardened chancre, and it comes with the swelling of the glands; but with it the glands never suppurate. I at once institute the mercurial treatment. Now, there is one point here upon which there is a difference of opinion, for some think that you cannot prevent the secondary symptoms; but I say that if the treatment be well done and soon done—and this is most important—you can prevent the first bursting out of the secondary symptoms. Why it is not prevented is, that the treatment is applied too late in the first instance, and the secondaries often come before the treatment of the primary is commenced. But if you make the treatment of the primary early and effective, the secondary will not appear; I can give you warrant for that. The best treatment for the secondary symptoms is the mercurial, and it must be continued and continuous. In Germany, and in other places as well, the treatment of the secondary symptoms is not continued long enough. You should choose a treatment which does no harm to the constitution, and continue it for five or six months, and you will have very few cases of relapse; and, after the mercurial treatment is finished, go on for another six months with iodine. When a person comes to me, I tell him that he will have to continue under treatment for twelve months. If he will, he will; but if not, then I say at once 'good-bye.' But then, you know, there are complications. The treatment I have given you is for syphilis arising in a person who is otherwise healthy, and there is then but one enemy to fight against. But in other cases you may have, in addition, scrofula, or an otherwise bad constitution. Well, then the case is not the same; for many of these constitutional disturbances are interfered with by the syphilitic treatment. In many of these cases, the syphilis is the second thing to look at, and you must begin with the constitutional disease first; you must attack the strongest enemy first, and he sometimes waits until you come to him before he opens his attack. Then you must come on gradually with your syphilitic treatment; and that which I prefer in complicated cases is iodide of mercury, which causes little diarrhoea. One capital treatment is that of rubbing in—it is easy and effective. But there are cases in which the rubbing cannot be employed. In the next stage, I employ iodide of potassium. I use large doses of this, up to 60, 70, 80, and 100 grains a day, and even more. I have made experiments with this; and I have found that, half an hour after the dose has been given, it has passed through the urethra; and it is in reality a sort of broom to the blood. The supply must be kept up. In secondaries, a treatment partially of this iodide and of mercury has its advantages. I have had the potassium stop doing good, and I have gone back to the mercury with good results. That is what Mr. Acton has said, and I quite agree with him. When syphilis has lasted a long time, and has had great effect upon the constitution, it somehow disappears, and leaves the patient suffering from a complication of diseases which may have been existing before. Well, then, you must stop all syphilitic treatment, and repair the deterioration of the blood by iron and bark. Mr. Acton spoke about the use of bromide of potassium; and I agree with him in its use, for it is a splendid remedy for a complication of syphilis in some cases—in syphilitic diseases of the brain and nervous system; but you cannot depend upon it as an antisiphilitic remedy.

"Now I would impress you that you can tell your patients that this terrible disease can be radically cured if they have the courage sufficient to go through

the treatment, and their physician have the courage to go through it with them. I again thank you for the cordial reception you have given me."—*Brit. Med. Journ.*, Aug. 17, 1872.

30. *Treatment of Syphilis by Means of Hypodermic Injections of Corrosive Sublimates in the form of a Chloro-albuminous Solution.*—DR. STAUB, of Paris, has published, under the above head, the results of a most interesting series of experiments. The object of Dr. Staub was to avoid the local accidents caused by hypodermic injections of sublimate, and also to be able to employ stronger doses. This he effected by means of an albuminous solution of sublimate in alkaline chlorides, according to the principles laid down by Gubler, Mialhe, Barendsprung, etc. The formula for injection deserves to be carefully noted. Sublimate and chloride of ammonia, of each 20 grains; chloride of sodium, about 62 grains; distilled water, 20 grains. After filtration the whole is mixed up with an albuminous solution (white of an egg, water  $4\frac{1}{2}$  drachms). This mixture produces no local inconvenience; it contains 5 milligrammes (about  $\frac{1}{3}$  grain) to every 20 drops. The results of treatment, states Dr. Staub, have been very favourable. In the forty-four cases related the duration of treatment varied from seventeen to thirty-four days, with one centigramme ( $\frac{1}{10}$ th grain) of sublimate injected each day. The author comes to the conclusion that the hypodermic method, with the chloro-albuminous solution of sublimate, can and ought to be transformed into a general mode of treatment of syphilis; that it will take the first place in the therapeutics of syphilis; and that it may be applied to all cases (syphilitic or not) where a mercurial treatment is indicated.—*The Lancet*, July 20, 1872.

31. *Strictures of the Urethra.*—The following instructive remarks by Prof. OLIVER PEMBERTON (Address in Surgery before Brit. Med. Assoc., Aug., 1872), on this subject, will, we are sure, be read with interest.

"It is to me remarkable, but it is true, that the views entertained by the highest surgical authorities of the day, differ on no subject so widely as on the particular system they adopt and recommend in the treatment of stricture. Simple dilatation and rest, I am thankful to say, have had a great following, and, if I mistake not, will yet rise into higher position. The main quarrel is between the advocates of internal as opposed to external division. The late Professor Syme (*Stricture of the Urethra*, p. 21, 1855) thought he had effectually put an end to the use of those 'dreadful engines,' as he termed M. Reybard's instruments; but he was mistaken, for strictures of this day are both cut, split, and torn; and new engines for the purpose multiply, as if the great surgeon had never lived to speak of plunges in the dark with caustic, or of ripping open the urethra by internal section.

"Stricture may fairly be defined to be a diminution of the normal diameter of any portion of the urethral canal; and as it must be admitted that the existence of any stricture, however slight, from whatever cause proceeding, and of whatever nature, may sooner or later give rise to serious consequences in the condition of either the bladder or kidneys, it is needful for the physician to discover it and cure it as soon as possible. But the real question is in reference to this word cure. Have we to deal with a simple stricture that has resulted from inflammation of the lining membrane of the urethral canal, or with a stricture, originally of this kind, which has been aggravated and increased in extent by ill-considered surgical proceedings?

"For the first, there is a cure by simple dilatation. For the second, there properly is no cure. Once organic stricture, always organic stricture, is my belief. Whenever the lining membrane of the urethra has been injured, whether by accident, disease, or by bad surgery, the spot will contract and establish permanent stricture, and I do not believe that the materials constituting such cicatricial narrowings are ever absorbed.

"If you endeavour to restore the normal calibre of the urethra under these conditions by ever so well considered a system of dilatation, my opinion is that the contraction will return sooner or later with increased vigour, the natural



elasticity of the canal being gone; in other words, dilatation will not effect a cure, and never does effect a cure.

"But dilatation, if it be well and properly carried out, will protect the patient against the occurrence of those diseases which, dependent on individual health and mode of life, arise either rapidly or slowly in all cases of stricture. The degree to which it is necessary to carry this may fairly allow of discussion; for I have ever before my mind the conviction that the very means made use of to effect the so-called cure, may become the certain cause of the continuance, and, in many cases, of the increase, of the malady.

"I think it will be admitted that the tendency to narrowing in cases of stricture, differs very markedly in individuals. Some may show few signs of change during many years, others, especially those arising from the effects of laceration by direct violence, certainly, surely, and often rapidly increase. In all cases, treatment by dilatation is necessary; but I doubt myself whether it is needful always to endeavour to restore the standard of the canal to the utmost of its original extent. I believe that there are many cases which admit of being maintained at a standard short of this, depending, however, on the facility with which the contraction yields, and its rate of increase subsequently. And it must never be forgotten that when once this treatment by dilatation has been commenced—no matter how carefully or how thoroughly it may have been done—it will have to be continued, whether at the hands of the surgeon or of the patient, more or less during life.

"For my own part, time being given, I do not believe that there is any stricture through which an instrument cannot be passed by a skilful surgeon. This being so, treatment by gradual dilatation follows; and in my judgment this should be by the silver catheter, as the safest, the simplest, and most certain instrument in the greatest number of hands yet given to us, *bougie à boule* and *bougie olivaire* notwithstanding. If the induration be cartilaginous non-dilatable, or if there be fistula, the treatment by external division on a grooved staff should be adopted as speedily as possible.

"Entertaining this view of the permanence of the changes established in the urethra by injury or disease, I am not very likely to favour any internal severance of the lining of the canal, whether by Mr. Holt's method of so-called 'splitting,' or by any form of internal cutting. I believe a wound is produced just as much in the one case as in the other. I regard those methods as artificially inducing the very conditions which I lament should result from almost unavoidable causes; and I further believe that a shut-up wound on the internal face of the lining of the urethra, is attended by dangers, from which an open wound on the outside face is comparatively free.<sup>1</sup> I have had occasion to divide the urethra after Professor Syme's method in upwards of thirty cases. In one case only was there a fatal ending, and this from pyæmia. In no case was there a relapse, provided that an instrument was passed from time to time, the frequency of this being determined by individual tendency to re-contraction, once a month to once in three months being about the average; and by this means the calibre of the urethra was without difficulty maintained at its original standard. All the cases that I have seen, save one, have required this continued resort to dilatation, and will require it, in my judgment, more or less, during life. For there is no more a cure by this, than by dilatation or splitting. In the case that did not require it a fistula remained permanently in the perineum, letting through a little urine, the general stream flowing by the urethra, which at the end of twelve years shows no disposition to contract.

"If the induration of the urethra, and narrowing, be of such an extent as to preclude the idea of dealing with it by external division, I prefer to tap the bladder by the rectum. I do not feel inclined, at present, to divide from the bulb to the meatus; and this literally must be the length of an incision in many of these long-standing cases, if the entire disease is to be dealt with.

"There are numbers of these inveterate cases wholly unsuited to external division; but they are eminently calculated to be dealt with by a method which

<sup>1</sup> I will, with Sir H. Thompson, admit its use in narrowings at the external meatus.—*Pathology and Treatment of Stricture*. Third edition.

deviates the course of the urine to another channel, in order that the rest may heal the fistulæ, and absorb much of that adventitious material blocking up the natural urethra, which can then readily be found, and have a standard established almost without resort to dilatation.

"I frankly say that I do not believe that either internal or external division of any urethra will cause the healing of fistulæ in the groin, buttock, and perineum, where a man passes his urine, as it has been graphically described, like a watering pot. (See Discussion: Medical Society of London: *British Medical Journal*, November, 1870, p. 590).

"Surely relief by the rectum will stand comparison with all the manœuvres that have been suggested from the days of Hunter to Grainger, and from Grainger, who, by the bye, belonged to us here, to Gouley and Wheelhouse. I cannot conceive why a patient is to sustain—sometimes for hours together—the distress belonging to hopeless attempts made to trace, in that stage of the disease, an impracticable canal, when the chief cause of the malady—the flow of urine—can be reached and diverted in a moment. Since Mr. Cock published his views (*Medico-Chirurgical Transactions*, vol. xxxv. p. 153), now just twenty years ago, I have had many opportunities of seeing the results of this proceeding.

"I am able confidently to state that it is wholly free from danger. Indeed, I can scarcely conceive death following as a direct result of the operation. So little fear of the proceeding had one of my patients that he has been tapped at least six times for the relief of fleeting attacks of retention, dependent on a rapidly distended bladder, unable to empty itself in the presence of long standing organic stricture. I have seen him almost within a day or two afterwards as if nothing had occurred. Further, no fistula remains, for the opening in the rectum invariably closes after a few weeks.

"I have left in the silver canula for three weeks, and have not found inconvenience from its presence; indeed, it appears to me that one of the greatest arguments in favour of its adoption exists in the fact of the position of the canula, which, whilst certainly securing the emptying of the bladder, is wholly removed from the urethra. I am strongly myself of opinion that many urinary cases terminate fatally from urethral irritation, set going and kept up by an instrument retained in the canal in its length.

"Some persons are very tolerant of tied-in catheters, whilst others, dependant on a certain idiosyncrasy, cannot sustain with impunity the simple introduction of an instrument. I saw a case in a young man which all but ended fatally from epileptic convulsions, induced by a first catheter; whilst the single introduction of a lithotrite in a man of 77 to measure a large smooth stone that had been carried with impunity for years, set up such an attack of cystitis that death ensued. I was very much impressed by a case in which a man, suffering from complete paralysis from the bladder downwards, owing to concussion of the spine, had a silver catheter tied in his bladder. He appeared sinking fast, and the most profound irritation of the bladder was established. I directed the urine to be drawn off every eight hours, and he began from that moment to amend, and ultimately recovered. Here, doubtless, the true explanation lay not in idiosyncrasy, but in the fact of the existence of disease from the injury. You may leave an instrument in the bladder for years from the perineum, but you cannot do this with impunity and traverse the length of the urethra. Morbid sympathies become excited in connection with the urethra, which are not produced by the introduction of instruments into other mucous channels.

"In what I have said, I have urged the adoption of tapping by the rectum, as affording assured relief to the most inveterate forms of stricture. And in considering the treatment of this disease, I have hitherto limited my observations to cases of stricture of the urethra *per se*, not to those complicated by retention of urine. I must equally urge it, however, as the remedy most reasonable for almost every form of retention. It is the absolute cure of spasmodic stricture: and if, in any given case arising from this cause, after one good effort has been made to obtain relief by ordinary means, there is no success, it should be carried into effect. If retention be present with an impermeable urethra from organic stricture, a double necessity supports its selection, whilst I have

yet to learn that it is inadmissible in the retention of old people from enlarged prostate. I know that it can be accomplished in these cases, but of course not so readily as if the rectum had only its ordinary contents; and I am quite satisfied that far less irritation would be produced in the majority of these diseases, where death so often directly results from the effects of instrumental measures, by the presence, at the most depending part of the bladder, of a harmless tube, calculated to secure the removal of all urine secreted, and thus master that inevitable decomposition which is not overcome by any other method in use, for the simple reason that one and all fail to empty the bladder. If the membranous urethra bulge behind a stricture, or if an abscess opened in the perinæum suggest a ready path to the bladder, by all means let a female catheter effect, through the perinæum, what otherwise, I maintain, can be accomplished by the rectum.

"Some years ago I asked the question, 'Can the urethral canal be permanently restored whenever any complete and considerable portion of its length has been entirely destroyed?' I believe the answer must yet be 'No.' I had then a boy of sixteen, with at least two inches completely destroyed by burning; and, believing this, I established him with a silver perineal tube, through which he now (aged 27) passes his urine without trouble; but there is nothing in the growth of the parts that tempts me to interfere, for I know the whole circle of the canal must be gone.

"I think, however, that if only a streak of mucous membrane lingers about the part, an efficient connection can be re-established even after the lapse of many years.

"I saw in the early part of this year a patient, aged 30, who had sustained, eighteen years previously, such a laceration, that two inches below the meatus was a fistulous opening into the urethra, three-quarters of an inch long. The canal was pervious from the meatus to about one inch above the bulb, where was a second small fistula; then, the canal was obliterated for an inch, and a third fistula, placed just at the commencement of the membranous division, gave exit to all his urine. For eighteen years, then, the urethra from this spot had been unused. I first closed the penile fistula, paring the edges, which looked beautifully in apposition for some days, and then came apart as usual. But by clipping the penis with a self-acting spring, on the principle of the *serve fine*, the edges were admirably united. Then I laid the lower fistulæ into one, dividing all the hard textures between them, and passed an eight catheter, and for forty-eight hours tied it in the bladder. After this I passed nine daily. The patient learned to pass it in a week himself; and at this time the canal is in excellent order, with the introduction once a week. Now, I do not think the roof of the urethra was destroyed here, and hence the reason of a success which I did not expect.

"In reference to the repair of penile and scrotal fistulæ, I would remark that they can alone be treated satisfactorily by the urine being drained through the rectum, or, as here, through the perinæum. Even then, union by first intention is a myth; but union can be obtained by keeping the granulating edges together by some artificial means, at the same time that vivacity is maintained in them by the use of the acetum lyttæ.

"And now, permit me to indulge the hope that the illustrations I have been enabled to place before you of modes of practice have not been devoid of interest."—*British Medical Journal*, August 10, 1872.

32. *Lithotomy*.—Prof. O. PEMBERTON states (Address on Surgery), "Up to the early part of the year 1868, I had invariably performed the lateral operation of lithotomy in all cases and at all ages, and had encountered that good and ill luck that always, sooner or later, disturbs the statistics of the most successful or the most unfortunate of operators who take all that come before them. I had reached my sixtieth case. Of this number, thirty-five were under twenty years, and but one had died from the operation—a child of four, a complicated case, with stone both in bladder and urethra. On the remaining twenty-five, four had died at 79, 59, 56, and 53. Surgically, there was nothing to be regretted concerning these, save their deaths; for about them all were condi-

tions favouring a bad rather than a good ending—conditions that happen with stone, at all times, and to all people, and will happen again; so I need not touch on them further now.

"In all this I had used the single knife and the laterally grooved staff, and I did not think then I should use any other instruments as long as I continued to operate. But what happened? I cut a boy of eleven, and extracted an ordinary-sized stone, without, apparently, complication of any kind. Hemorrhage followed, of such severity that it was with difficulty controlled, and death from its immediate effects took place within twenty-four hours of the operation. I could find nothing in the *post-mortem* examination to account for the bleeding. It is true he had but one kidney, but that had nothing to do with his death. It was clear the cutting did it somewhere; and I naturally thought I should like, in the future, to extract such a stone as the one I then removed with less of the cutting in the dark, if possible. Accordingly, I turned to median lithotomy. Allarton, who practised near here, had delivered a lecture on the subject of lithotomy simplified, in the Sydenham College, in 1854; and I was much struck by his arguments as to the capability of dilating the neck of the bladder without incision. I felt satisfied that, for bladders within reach of the finger, and for small stones, if not for all, there should be escape from the fear of uncontrollable hemorrhage, though I had never tested his proceeding in the living subject. Since, I have had an experience of twenty-five cases. Of these, twenty have been of ages from two to twenty years, with not a single death. Of the five, of ages from forty-six to sixty, one died of peritonitis.

"I perform the operation in the following way. I open the urethra, just behind the bulb, on a centrally grooved staff. Along this, I pass into the bladder a tapering probe-headed gorget, withdraw the staff, and, taking hold of the handle of the gorget, pass the finger gently along its groove into the bladder, letting it dilate as it goes, and so take the place of the receding guide.

"Now, I know that many believe that this dilatation means laceration. It has, indeed, not very long since been described as 'complete rupture and laceration' (Mr. Teevan: *Lancet*, vol. ii. 1870, p. 237), and as 'unsurgical and dangerous.' I answer this statement, which I venture to characterize as eminently reckless, by a positive contradiction as to facts.

"I have cut enough cases by the ordinary lateral method, and am still cutting them, to know the difference between laceration and dilatation. I am quite satisfied that my finger passes into the bladder without laceration in the operation I have described. I feel the entrance gradually narrow itself into a mere ring, which encircles and equally grasps my finger on all sides. Through this ring pass the forceps; through this ring passes the stone, and any number of stones, or any fragments of stones; and there is no laceration, unless the stone be too large for the proceeding, or violence have been used.

"I hold that it cannot be necessary to make incisions to the same extent to remove a body the size of a pea, as we should make for one of the size of twenty peas; and, further, my conviction is that, whilst in all ordinary dangers, the median operation as compared with the lateral, is simply equal, in two it is immeasurably less. These are the dangers from hemorrhage, and from prolonged recovery. The danger from hemorrhage in the median operation can only arise from a central wound of the bulb. It is not unlikely to take place, and did occur to me once in the twenty cases, and was readily arrested; for it must be borne in mind that the source cannot be far away, and so happily cannot require the use of that most hateful of all appliances—a plug for the wound. As to recovery, the exception is to find any constitutional disturbance at all. The urine is retained and passed naturally. I would like to ask if any one ever knew a patient pass his urine naturally with a 'lacerated' neck of bladder? and the wound is healed mostly within a fortnight.

"I shall be prepared for it to be said of my advocacy of median lithotomy—'The statistics of your own cases are against you.' My answer is, 'Statistics are not everything.' A case may end just as successfully one way as another, though the troubles on the journey differ widely, and no one will question that lateral lithotomy in children is eminently successful. But every operator who has sufficiently tried any given two methods of procedure, has a right to say

which of the two he prefers; and therefore it is that I say, when I reflect on the anxiety that I endured in watching the threatenings of mischief in children cut by the lateral operation, I rejoice that I have cause for it no longer, notwithstanding the general good fortune that attended my practice with that method.

"And now as to the cases where the median operation should not be selected. In any instance where the finger is not likely to reach the bladder, so that instrumental dilatation would be required, the lateral operation should be preferred. The reason I use my finger is because I have more control over it than over an instrument. I can regulate the one, not the other. I would sooner cut than lacerate at any time, and I consider that the use of instrumental dilatation in this operation means laceration. You may use it, on and off, with impunity, but it is a most destructive instrument—reviving all the dangers of the discarded Marian. I attribute the peritonitis, which carried off my single fatal case, solely to the laceration of the neck of the bladder that of necessity followed its use. I repeat, the only dilator must be the finger, and so long as the neck of the bladder can be widened by this sufficiently to allow of the removal of a stone without laceration, I shall deem it a part of my duty to advocate the adoption of this form of median lithotomy.

"I hope, however, my observations will not be misunderstood. I am second to none in admiring what Cheselden practised, and what Liston and Fergusson have brought to perfection—the lateral operation for stone. I have been surrounded during the whole of my professional life by teachers and colleagues who have had unusual opportunities for practice, and who have realized brilliant successes in this very operation; but, in my opinion, it is not the most desirable operation to perform for all stones, at any age and under any circumstances, as some would have us believe."—*British Medical Journal*, August 10, 1872.

33. *Subperiosteal Resection of the Elbow*.—M. OLLIER, of Lyons, has just made known the results of subperiosteal resection of the elbow in forty-eight cases, twelve of which were traumatic, and the others caused by chronic arthritis. M. Ollier states that, with proper care and skilfulness in dissecting the entire periosteal sheath, the bones are not only reproduced in their continuity, but with their heads and articular tuberosities, so as to permit the play of the joint in all its movements. It is necessary to employ minute precautions in the after-treatment for obtaining the above results. Slight movements must be made at an early time with the joints. Ankylosis is not to be dreaded, but rather too great mobility of the joint, especially in individuals of from forty to fifty years of age. In these cases the bones must be cut to a certain length, so as to avoid such mobile articulations.—*Lancet*, August 24, 1872.

34. *Traumatic Tetanus successfully treated with Chloral and Bromide of Potassium*.—MR. ALEX. FERGUSON reports (*Edinburgh Med. Journ.*, July, 1871) a case of this. The subject of it was a man, æt. 20, whose hand was injured by a circular saw. "The injury was of such a nature as to necessitate my amputating the thumb close to the hand. The operation was done under chloroform, and dressed antiseptically with the utmost care. Under this treatment it cicatrized kindly until the morning of the tenth day, when I was urgently called to his house. I found to my horror the jaws firmly clenched, the characteristic 'risus sardonius' distinctly marked, and the body slightly opisthotonic. The wound was inflamed and painful, and the healthy secretion dried up. A large linseed poultice, slightly carbolized, was applied, and 30 grs. of chloral hydrate given, its sedative effect being promoted by a whiff of chloroform. In the evening, symptoms aggravated, the opisthotonos being more complete. Repeated the chloral, increasing the dose by 10 grs. Next morning patient is decidedly better, complains chiefly of præcordial pain extending through to the back, and probably diaphragmatic. Continued the chloral treatment as follows: 40 grs. ter in die, alternately with 30 grs. bromide of potassium bis in die, to every dose of which are added 10 grs. of chloral.

Under this plan of treatment, the effects of which resembled chronic alcoholism, the spasms were kept at bay. The only additional treatment was the hot bath with mustard for the first four nights. . . . There is one incident of pathological significance that occurred in the management of this case. One morning, when dressing the wound, I passed my finger along the cicatrizing surface to repress exuberant granulations. It came in contact with a sharp point. This I found on examination to be a small sequestrum of comminuted bone, the removal of which was followed by rapid cicatrization, and a very marked remission of the symptoms. Such was the treatment exclusively adopted as far as medicine is concerned. The dietary consisted of farinaceous articles, with beef-tea and milk, and small quantities of whiskey and soda-water.

"During four weeks this patient took 120 grs. daily of chloral, and 90 grs. bromide of potassium (in the aggregate, 3600 grs. of the former, and 2700 grs. of the latter), without any appreciable effect on the general health beyond transient loss of memory, and the ordinary manifestations attending intoxication. He is now able to walk through his room, but until every sign of spasm has disappeared, he will continue to take the chloral."

### 35. *Aspiration of Morbid Fluids as a means of Diagnosis and Treatment.*

—Dr. DICULAFOY, in a communication to the Academy of Sciences, June 24, 1872, sums up the results of the various interesting experiments which he has been conducting for two years with his capillary aspirator, an instrument which is now being extensively used in Paris with the very best results. M. Dicu-lafoy strongly insists on the use of the aspirator as a means of diagnosis and treatment. It serves, in the first place, to show with certainty the presence, seat, and character of various pathological fluids, and also to dry up the source of such fluids. Dr. Dicu-lafoy, emboldened by the results obtained, does not hesitate in asserting that it is always possible to reach with certainty, and with no kind of danger, any collection of liquid, whatever may be its situation and its nature; that the aspirations may be frequently repeated in the same position without any inconvenience, and almost always with the effect of drying up the source of the fluid. He lays down the following law as the result of his experience: When a fluid, whatever may be its nature, gathers in a serous cavity, or in any organ, and when that cavity or that organ is accessible without danger to the patient, our first care should be to withdraw that liquid; if it again forms it must be again withdrawn, repeating the operation frequently, if necessary, until the serous membrane is exhausted by a purely mechanical and quite inoffensive means, and without attempting to modify the secretion by irritating and sometimes dangerous agents.

The following is a list, divided into three groups, of the various diseases to which M. Dicu-lafoy's aspirating method has been applied: 1. Fluids accumulating in a serous cavity: hydrocephalus, hydrorachis, pleurisy, pericarditis, hydrarthrosis, synovial cysts. 2. Fluids formed in the deep parts of organs: abscesses or hydatid tumour of lungs, abscesses or hydatid of liver, liquid tumours of the spleen and of omentum, ovarian cysts, retention of urine, strangulated hernia of the intestine. 3. Liquids formed within the cellular tissue of various regions: congestive abscess, bubo, perinephritic phlegmon, iliac phlegmon, periuterine phlegmon.—*Lancet*, August 24, 1872, and *Rev. de Thérap. Méd.-Chir.*, August 1, 1872.

### 36. *Strangulated Inguinal Hernia Reduced after Aspirating Puncture.*—Dr. LÉON LABBÉ, Surgeon to the Hôpital La Pitié, communicates to *The Lancet* (July 20, 1872), the following interesting case:—

In the night of June 20th, Mr. D., aged seventy, an exceptionally strong and robust individual, after a violent fit of coughing felt an intense pain in the right inguinal region. This was followed in a few minutes by nausea and vomiting; whilst a somewhat large tumour showed itself in the right inguinal region.

On the 21st, at 6 P.M., I first saw the patient, together with his ordinary medical attendant, who had employed taxis with great care but to no effect. I then tried taxis myself, but was equally unsuccessful. The nausea and vomiting still continued; pulse 75. Taking into account the circumstance that strangu-

lation dated only about eighteen hours, and that probably the anatomical lesions would be very slightly advanced, I without hesitation proposed puncture with the aspirator, and without further delay I introduced the No. 2 needle. About ten grammes (two drachms and a half) of a yellowish liquid immediately escaped, together with a quantity of gas which I cannot exactly estimate. The tumour, which was as large as the fist, flattened immediately; and a very gentle pressure exerted for one minute near the neck of the sac caused complete reduction of the hernia. The patient felt immediate relief, and expressed his satisfaction. During the few hours which followed—from 6 to 11, and more especially between 8 and 11 P.M.—there was a little vomiting, and more particularly nausea. The patient was somewhat feverish, and had slight rigor. I had administered, as I always do after reduction of hernia, whether by taxis or operation, pills of the gummy extract of opium (each containing one centigramme—one-sixth of a grain—to be taken one every two hours, so that ten or twelve centigrammes may be absorbed in twenty-four hours), with the object of bringing on paralysis of the intestines. At 11 P.M., the symptoms above alluded to all disappeared, and from that time the patient enjoyed the most complete comfort.

June 22. Pulse 60; countenance normal; scarcely any tenderness in the abdomen over the inguinal region.

23d. Three natural stools; no pain or fever; appetite excellent.

Eight days afterwards the cure, which had been evident even on the third day, had become quite permanent. The patient's health is now excellent.

37. *Case of Gastrotomy.*—Dr. FRANCIS TROUP records (*Edinburgh Medical Journal*, July, 1872) a very interesting case of this. The subject of it was a man, æt. 50, who suffered from loss of appetite and gnawing pain at the epigastrium after taking food. For a year afterwards, vomiting of bloody-looking fluid containing particles of food set in. No treatment relieved these symptoms; the quantity of food rejected increased; blood was brought up in small nodules, like "boiled liver," as patient described it; and the act of swallowing was slowly performed, and excited a peculiar suffocative cough.

No tumour could be felt, but a bougie passed down the œsophagus encountered a constriction at lower third of sternum; when this was passed, a second, an inch or so lower; and then it found free entrance into the stomach.

During many months, nine at least, attempts were made to keep the passage open by bougies, the patient himself learning to introduce them; then, as increasing difficulty of passing them was experienced, elastic catheters of gradually-diminishing calibre were tried, and a certain amount of food introduced in this way. Nutrient enemata were also freely used. By and by the canal became completely closed, and there was constant hawking and coughing up of clear, tenacious, ropy mucus, and for a month before death patient was almost entirely supported by the enemata. During the first part of this month patient complained much of hunger; during the last fortnight, only of a thirst, which was something dreadful to bear. He was anxious to live, if possible, or, at all events, to have something done to relieve this tormenting thirst.

Dr. T. explained to him that it was possible to open the stomach and to introduce nourishment; but that this could not possibly cure him, and might speedily prove fatal; but if he survived, his thirst would probably cease. He decided upon the operation, which was accordingly performed by Dr. T., assisted by Dr. David Lyell and John Lyell. "A straight incision, three inches long, commencing a little below the extremity of the xiphoid cartilage, was made to the left of the middle line of the abdomen, and midway between it and the costal cartilages. The thin abdominal walls and peritoneum were easily cut through, and, guided by the liver edge, search was made for the stomach—a somewhat difficult matter, owing to the tenseness of the abdominal parietes, and the shrunken condition of the viscus itself. Pulled down and firmly held by forceps, an opening into it was made, its edges stitched to the parietal incision, and a tracheotomy tube of moderate size, and with a large shield, secured in the wound. Milk, in gradually increasing doses, and stimulants, were now easily passed into the stomach, and the three remaining days of the man's life were spent in comparative comfort.

"The operation scarcely raised the pulse, and the patient repeatedly expressed the opinion that it was worth while having undergone it, were it for no other thing than the quenching of his thirst. A post-mortem was with difficulty obtained. The cardiac end of œsophagus was found converted into an epitheliomatous mass, through which, even with the assistance of daylight, no passage could be found. The stomach was very small, and had been struck about its middle. The opposed serous surfaces of stomach and parietal incision were in parts adherent, and the incision itself, in all its length, healing. The peritoneum had not inflamed—a sufficiently remarkable fact, considering the free handling to which it had been subjected."

38. *Gastrotomy in Cases of Internal Strangulation.*—Dr. DELAPORTE, in an inaugural thesis just published in Paris, having carefully compiled and investigated a large number of cases bearing upon the above subject, comes to the following conclusions: Gastrotomy, far from being an invariably fatal operation, has afforded as numerous successful results as other major operations. Gastrotomy, which is pointed out by theory as the best surgical treatment of internal strangulation in the majority of its forms, should therefore hold its place in practice. Gastrotomy, which offers as many chances of success as enterotomy, and which gives more complete results of cure, should always be preferred to enterotomy in cases where some doubt exists as to the cause of strangulation or the choice of an operation. Gastrotomy, when once seen to be necessary and decided upon, must be performed as soon as the symptoms leave no doubt as to the existence of internal strangulation; and as early as possible, in order to frustrate the development of peritonitis, the formation of adhesions, gangrene of the intestine, and exhaustion of the patient. The opening of the abdomen must be made in the mesial line, and largely, so as to permit free access to the cause of the strangulation. If the strangulation cannot be reduced the operation must be terminated by opening the bowel in the most favourable situation, and the establishment of an artificial anus through the primary incision. Gastro-enterotomy would thus be performed.—*Lancet*, Aug. 31, 1872.

39. *Extraction of Foreign Bodies from the Ear.*—M. MIOT remarks that the extraction of foreign bodies that had gained entrance into the ear, although generally accomplished with facility, had been the subject of a host of inventions now for the most part forgotten. Instruments had been constructed often of great ingenuity, as though it had been desirable to forget that the best mode of extracting a foreign body in this situation is to inject a stream of warm water, varying in strength and volume. M. Miot then proceeds to treat of foreign bodies in the ear under the three heads of liquids, soft bodies, and hard bodies. In regard to *liquids*, he remarks that they may either enter from without or be formed, as in the case of pus, in the ear itself. Otitis is often set up by the prolonged retention of water in the lower parts of the meatus, after a general bath. At the outset it is sufficient to pass down a small wad of cotton wool and keep it there for a few seconds, but if pus have already made its appearance it should be carefully and frequently removed. Various substances are often injected for the cure of deafness by quacks, as laudanum, ether, chloroform, etc., but if these are employed at all they should be very much diluted. M. Miot states that Mdlle. Cléret did much harm in many cases by the instillation of sulphuric ether in the pure state. As regards *soft substances*, wool, cotton-wool, peas, and many other substances are often met with, and these are generally extracted with facility, either with forceps or by injection of warm water. *Injudicious attempts to remove hard bodies* often give rise to distressing results. Whenever it is necessary to remove such with instruments, good light and properly constructed instruments, bent at a right angle and with delicate limbs, should be employed. It is better to wait than to perforate the tympanum, or do other serious mischief. Irrigation with warm water should, speaking generally, first be employed. The foreign body may occupy different parts of the organ, as the external part of the meatus, the osseous portion, partly in the meatus and partly in the tympanum, and finally altogether in the tympanum, where it may either be visible or invisible.



In the first case extraction is easy: care must be taken not to push it into the wider portion of the tube near the membrana tympani; but, if this should unfortunately happen, irrigation may be had recourse to with every hope of success. It must be recollected, however, that the tympanic membrane may be broken down if the current of water be injected too vigorously. Should this plan not succeed, Richet's modification of Leroy d'Etiolle's curette or M. Bonafond's canula forceps may be employed, or one of the instruments that M. Miot has himself suggested. A slender rod, capable of having the last quarter of an inch bent at a right angle by means of a wire running up to the handle, but which can be introduced straight between the foreign body and the wall of the meatus, is often serviceable in cases of oval and irregularly shaped bodies. Rounded bodies are sometimes extremely difficult to extract. In one very troublesome case he used two-elbowed extractors with success. Bits of glass tubing may be best removed after a little judicious manipulation by forceps, with a good otoscope and suitable instruments: the use of these is preferable to injection. The cases where the body is partly in the tympanum and partly in the meatus, chiefly consist of those where pins and pieces of wood have been pushed in during ineffectual attempts at removal. He gives an instance where he removed such a fragment of a lucifer match by means of the sharpened point of an elbowed or articulated extractor. Lastly, the foreign body may be altogether in the tympanum, and either visible or invisible. He describes a case where, having recognized the presence of a foreign body (a button) in the tympanum, he attempted its removal by the injection of warm water, but the only result was so to displace it that it was no longer visible, and he was only able again to bring it into view by throwing in an injection through the Eustachian tube, and he then managed to extract it by a sound with a hook. Living animals may be extracted by irrigation, either at once or after the instillation of a little camphorated oil or weak solution of potash: if they have passed through, by a small orifice through the membrana, into the tympanum, the opening may be enlarged and irrigation resorted to. M. Miot states, in conclusion, that from clinical observation he is satisfied that a foreign body may remain for a considerable period in the tympanum without fatal results; and it is therefore not surprising that such a body may long remain in the external ear without occasioning appreciable symptoms. Secondly, it is by no means necessary to employ injections of warm water in *all* instances where there is a foreign body in the meatus, because some drops of water remain on the inferior wall of the meatus, and this collection may, when the patient is exposed to cold, prove very troublesome.—*Practitioner*, April, 1872, from *Abeille Médicale*.

40. *Comminuted Fracture of the Atlas*.—Dr. E. HAMILTON exhibited to the Dublin Path. Soc., an interesting specimen of the cervical vertebræ of a man, æt. 40, who had fallen from a height of sixteen or seventeen feet, apparently on his vertex, for there was no mark of injury anywhere else. There was a contusion on the top of the scalp, showing the great probability that he had fallen head foremost, and that his vertex had struck the ground. He was seen in the act of falling, and was therefore very soon after the accident attended by Mr. Colles, the resident surgeon at Steevens's Hospital, who was sent for to see him at the concern where the accident happened. When seen by Mr. Colles, he presented the appearance of collapse, which he (Dr. Hamilton) thought was peculiar, having regard to the injury. It was collapse characterized more by failure of the circulation than by what they should rather have expected to find—failure of innervation; for he rallied in a short time, recovering consciousness in a very few minutes after the accident, and was able to give an accurate and detailed account of what had occurred to him. This was a most important matter, to which he wished to direct the particular attention of the Society. The man was removed to hospital, and submitted to a careful examination. From a line an inch above the nipple down to the extremities, there was complete loss of muscular power, both voluntary and reflex. On irritating the soles of the feet, there was to be seen a slight flickering movement of the toes, but he attributed this rather to direct excitation than to reflex movement. A similar condition had been noted in other recorded cases. There was also a

complete loss of sensation from the nipple down, and they could draw a line across, which was the border line of sensation and anæsthesia. There was priapism. The surface was cold and clammy; the temperature was low, and the respiration was carried on by the diaphragm, the intercostal muscles being thrown altogether out of action. The pulse was below  $40^{\circ}$ . On examining the neck, they found the man's head thrown very much backwards, almost reminding one of opisthotonos. On passing the hand lower down they detected a prominent and tender spot, pressure on which caused pain; and, from the appearances presented, they hazarded the diagnosis, that there was a fracture or injury producing pressure on the cord at about the fifth cervical vertebra. He had complete power of the upper extremities; he had power of deglutition, and considerable motor power above the point indicated by the line. On the next day he presented somewhat similar symptoms. He rallied a little; his pulse rose in frequency, and the temperature was also a little raised. There was retention of urine; the priapism was continuous and even more marked, and he complained of a remarkable symptom, which he (Dr. Hamilton) could not satisfactorily explain, that at the line of junction between sensation and insensibility there was hyperæsthesia. He complained of extreme tenderness, of a feeling as if the part were burned if anything touched it, just at the border line. He sank, became weaker and weaker, and at last died apparently of asthenia, having survived the accident forty-eight hours. The temperature ranged from  $85^{\circ}$  to  $98^{\circ}$ . In making the post-mortem examination, the first thing that struck Mr. Colles on passing in his finger to detach the spine, was that the atlas was perfectly comminuted: a fracture traversed the anterior arch. The posterior arch was broken in two places; the right transverse process was broken, but the odontoid process was uninjured. Further down they found a fracture, with displacement of the sixth cervical vertebra. They found it thrown backwards, and the intervertebral substance torn across; the laminae of the vertebrae were torn, and hence there was great pressure on the spinal cord. The peculiarity in the case was, in the first place and especially, the amount of injury done to the atlas, while the cranium was perfectly uninjured. It seemed as if the entire force was carried from the vertex to the atlas. It was most remarkable, also, that with this great amount of violence there should have been such a slight effect on the brain. The concussion of the brain passed off very quickly, which was greatly to be wondered at under the circumstances. The other symptoms were such as might have been expected from a fracture occurring in the neighbourhood of the sixth cervical vertebra.—*Dublin Journ. Med. Sci.*, May, 1872.

41. *Remarkable Case of Injury of the Spine.*—Mr. H. GRACE relates (*Brit. Med. Journ.*, July 20) the case of a man, æt. 22, who, while at work on his knees hewing coal from a seam, was crushed by an ironstone weighing ten or twelve hundred weight, which fell suddenly on his shoulders; the weight literally doubled him up, forcing the head down between his thighs and the perinæum close against the heels. It required the united efforts of three powerful colliers to lift the mass, by the aid of long iron bars, sufficiently high to allow a fourth to drag him from underneath—his own impression afterwards being that he lay there about five minutes. He was placed in this flattened condition in a cart, and carried to his home. A medical man who saw him found him cold, breathing in a short and hurried manner, with the pulse feeble and intermittent, and to all appearances rapidly sinking.

The first, second, third, and fourth lumbar vertebrae all appeared more or less implicated in the injury; both sensation and motion below the parts affected being utterly lost. One of the doors of the room in which the man was lying was soon taken down from its hinges, and placed under the mattress. With the aid of two men at his shoulders and two at his feet, extension was made; and the back resumed its normal position with a crack that was heard at a considerable distance. The breathing was immediately relieved, and the pulse improved by this reduction. The time that had elapsed from the occurrence of the accident was about an hour. The patient, not being satisfied with his medical attendant, sent for Mr. G., eight or ten days after the accident. Mr. G.

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"found that the door above spoken of had been removed from beneath the mattress, and that, consequently, the sacking of the bed had sunk considerably in the centre; moreover he had been raised and held in an upright position daily, for the purpose of introducing the catheter; these two causes combined had again displaced the back. I had the door immediately replaced on the bedstead, and a second time made extension, and again restored the spine to its normal position. This restoration was almost instantly followed by a slight motion in the great toe of the left foot.

"I gave strict orders that he should remain still on his back, and that not even his shoulders should be raised on any pretext whatever. Sensation and motion gradually returned to the anterior portion of the left foot, leg, and thigh, and to the posterior portion, in a less degree, about half way up the thigh; and about a month after the accident, similarly to the right leg. During the first two months, it was necessary to pass the catheter daily; after which period, the urine began to escape involuntarily, and it has continued to do so up to the present day.

"Three months elapsed before he could move his legs tolerably in bed, at which period I turned him on his side, and found, on examination of the back, a small bed-sore just over the sacrum, utterly devoid of sensation, of considerable depth, the slough of which was a long time in separating.

"In another month he was able to sit in a chair, and to walk across the room by the aid of the various articles of furniture. His progress towards perfect recovery of physical strength extended over a period of two years and a half, when he was able to resume his work as a collier.

"His present condition as regards sensation has not altered in the slightest degree since the fourth month after the accident, and is as follows. The sensibility in the soles of both feet, and in the posterior portion of both legs, is much impaired; and around the anus, perineum, inner part of both buttocks, scrotum, and penis, it is *entirely* destroyed. Although there is a slight sensation under pressure in the testicles, so complete is the absence of sensation in the buttocks, that when, last summer, he sat down on a garden-flue, ignorant of the fact of its being heated, his trousers were burnt through, and the skin completely charred, yet he was unaware of the fact till his wife noticed it, three days afterwards, whilst he was washing. The slough was somewhat deep, and the scar is still visible.

"Whilst at work in the pit, he frequently gets severe scratches and cuts on the soles of his feet, which he hardly feels. Each day, on his return from work, he regularly goes to the closet, and, by dint of powerful efforts, forces the feces to pass when solid, for when liquid they are not retained. At this time, the urine runs involuntarily in a stream, though at other times it drips continuously into an India-rubber urinal which he wears permanently; but in neither case is there any feeling of the passage of feces or urine.

"At the time of the accident, he was married, and the father of one child a twelvemonth old. Six months after the accident, in spite of the utter absence of feeling in the penis, he began to resume his matrimonial duties; and two children have been born to them since the resumption of the functions of his generative organs.

"The first loss of sensation and motion below the seat of injury was doubtless owing to the pressure on, or the solution of continuity in, the nerves forming the lumbar and sacral plexuses, the former of which evidently recovered its powers gradually during the first four months. The total loss of sensation can, I think, be only attributed to the breach of the pudic lesser sciatic nerve. Hence it would appear that, if the fact asserted by Günther—viz., 'that the erection of the penis in the horse entirely ceases on cutting the pudic nerve'—be correct, it has no analogy in the case of man; for here we have the pudic nerve evidently destroyed (as proved by the entire absence of all sensation in the perinæum, integument of the penis, etc.), and yet the power of erection is retained to such an extent as to allow fruitful coition. I cannot, therefore, but hold the opinion that the erection of the penis is due to the operation of the sympathetic system, the functions of which, I think, still remain in considerable obscurity. I take it there is very little doubt that the nerves of the sympa-

thetic system may be regarded as conductors of impressions; and, this being the case, what more natural than the fact of dwelling upon the enjoyment to be derived from coition should cause a turgescence of the organ lasting sufficiently long for it to enter the vagina and there fulfil its purpose in the animal economy? Moreover, the sympathetic system seems in general to influence the processes of involuntary motion, secretion, and nutrition; and this, considering the fact of the continued secretion of the semen by the testicles, and its ejection on coition, accompanied by no diminution of the sensations usually accompanying the act, may, I think, be fairly considered an additional argument in favour of my opinion that the pudic nerve can have but very little to do with the erection of the penis; whilst the nerves of the sympathetic system, which have not suffered any material injury, are directly concerned in that erection."

42. *Transverse Fracture of the Second Piece of the Sternum, caused by a Blow with the Fist.*—An interesting case of this is under the care of Dr. DESPES, at the Hôpital Cochin. Neither the heart nor lungs appear to have been injured, but the fracture of the sternum is shown by crepitation, and the fragments may be moved one on the other.—*L'Union Médicale*, June 15, 1871.

43. *Ingrowing Toe-Nail.*—Dr. HENRY FINCH correctly observes (*Brit. Med. Journ.*, Aug. 24, 1872), that "neither of the cutting operations is at all necessary for the complete and rapid cure of ingrowing toe-nail. If a small, thin, flat piece of silver plate be bent at one edge into a slight deep groove, and, after the toe has been poulticed twenty-four hours, slipped beneath the edge of the nail, so as to protect the flesh from its pressure, and the rest of the thin plate bent round the side and front of the toe, being kept in position with a small portion of resin plaster passed round the toe, a speedy and almost painless cure will take place; and the patient, after the first day, has the additional advantage of being able to walk. I have followed this method in numerous cases with uniform success."

[This plan of treatment is by no means new. We distinctly remember having seen it advised years ago, though we cannot recall the proposer's name.

We have treated a number of cases by a still simpler plan, and one which we have found to be entirely successful. This consists in insinuating with a narrow-bladed knife some lint between the nail and flesh, and renewing the application daily. In the early stage, this treatment is all that is required; but when the parts are much inflamed, a poultice may, at the same time, be necessary, and, if fungous granulations have occurred, they may require some caustic application, as nitrate of silver or red precipitate.

The cause of this troublesome affection is not, according to our experience, any peculiarity in the growth of the nail, as is generally supposed, but is usually caused by careless cutting of the nails, by which a rough edge is left, which, forcibly pressed upon the flesh by the shoe, causes ulceration. By the simple treatment above described, we are persuaded the barbarous operation of evulsion of the nail may be dispensed with.—*Ed.*]

44. *Means of Recognizing the Presence and Character of Metallic Substances in Gunshot Wounds.*—M. DESNEUX suggests the following proceeding, which he has employed in three cases. A flexible stem is covered at one of its ends with lint steeped in a solution of nitric or acetic acid, or simply vinegar. The lint is introduced into the wound for a few minutes, and then put into contact with a solution of iodide of potassium, so that reaction may take place. If there is any lead in the wound, the yellow colour of iodide of lead is immediately produced.—*Lancet*, Aug. 10, 1872, from *Bull. de l'Acad. de Méd. de Paris*, July 16, 1872.

45. *Nature of Melanotic Tumours.*—Dr. NERVEN concludes, from his investigations of melanotic tumours, that the melanotic matter is immediately derived from the blood. This is proved by the fact of the existence of colouration varying from yellow and brownish-red to black in melanotic tumours; the presence of yellow matter and blackish granulations in the cells of the tumour

(plasmatic cells), and even in the capillaries, the glands and cutaneous epithelia being perfectly healthy. The alteration of the blood takes place locally in the tumour itself. Diffusion and hemorrhage are the two causes of the colouring matter from the bloodvessels. It is probable that the elaboration of the cells themselves accounts in some degree for the intensity of coloration, and the rapid metamorphosis of colouring matter. Melanosis is, therefore, merely an accident in certain tumours, and this would explain how some tumours are only partially melanotic. Part of the melanotic substance may be found in the blood, urine, and principal viscera in the form of colouring matter or a finely granulated substance. Several experiments of inoculation failed to reproduce melanosis.—*Gaz. Méd. de Paris*.

46. *Disease of the Maxillary Sinus*.—Dr. WITTEN relates the case of a man, 45 years of age, who for some eighteen months had suffered from a projection outwards of the left side of the nose, and a frequent discharge from the nostril of mucus of a cheese-like appearance, exhaling a very fetid odour. The diagnosis in the case was carcinoma of the maxillary sinus. In preparation for an operation, the left side of the nose was split open, when it was discovered that the entire disease consisted in a distension of the thin shell of bone covering the left sinus by an accumulation within the latter of thickened pus, and the pressing the outer parietes against, and pushing outwards the left end of the nose, without the presence of any apparent alteration in the parts. The escape of the thickened pus was soon followed by entire healing. A similar case was in 1855 recorded by Maisonneuve.—*Centralblatt f. d. Med. Wissenschaften*, Jan. 22, 1872, from *Deutsche Zeitschr. f. Chirurg.* 1. pts. 1, 2, 3. D. P. C.

## OPHTHALMOLOGY.

47. *Cancerous Tumour originating in an Eye which had been long lost from some Inflammatory Affection*.—Mr. GEORGE LAWSON relates (*Royal London Ophthalmic Hospital Reports*, July, 1872) a very instructive case of this, and remarks in regard to it, that "it shows one of the evils, which may arise from a lost eye which is undergoing degenerative changes, is that it may become the seat of malignant deposit. It is true that instances of cancerous growths, originating in old lost eyes, are comparatively rare, yet they occur with sufficient frequency to show that the structural metamorphosis which usually, after a time, takes place in eyes which have been destroyed by accident or disease, is favourable for the production of cancer. A question naturally suggests itself, whether it is possible that the accidental loss of an eye may lead to such a series of inflammatory and degenerative changes as to render that eye liable to the development of cancer within it? In answer to this, I would say that I believe that accidental causes often determine the locality and the first outbreak of cancer; and, further, that if the cancerous affection had not been thus originated, many a patient might have passed through life without having given any evidence of a constitutional predisposition to the disease. In support of this statement, I would refer to the undoubted history so often given by patients, of the first outbreak of cancer in different localities of the body. Cancer of the lip frequently originates from an accidental scratch; cancer of the scrotum from the irritation of soot; and cancer of the tongue will often commence at the point which has been fretted by a rugged tooth. In females the repeated history of a blow on the breast as being the first exciting cause of scirrhus, cannot be ignored. A very remarkable instance of how an accident may produce a wound which will assume a cancerous nature, occurred in a patient under the care of my colleague, Mr. Hulke, in the Middlesex Hospital. An apparently healthy man was smoking his pipe, when his little girl, whom he was nursing, jerked her arm against the pipe stem and caused the

end of it to penetrate the soft palate. The wound did not heal, but very shortly became the seat of epithelioma, which spread over the roof of the mouth, and down the pharynx, and ultimately destroyed his life. With these facts before us, it is impossible not to recognize the relationship between cause and effect. Possibly in all such cases there may have been a tendency to cancer in the individual; but I do not think it can be for a moment doubted, that accidental circumstances may give rise to an outbreak of a cancerous disease which might not otherwise have manifested itself.

"In the case which I have related, the cancer originated in an eye which had been long lost. The patient had no history of cancer in his family; he had been always a remarkably healthy man, and my impression is, that, if he had had his disorganized globe removed, he might have passed through life without cancer having been ever developed."

48. *Rheumatic and Gouty Iritis*.—In the current No. of the *Royal London Ophthalmic Hospital Reports* (July, 1872) are some interesting and just observations on this affection, by Mr. JONATHAN HUTCHINSON, with the narration of numerous cases, and a summary of the opinions of standard authors.

"Rheumatic iritis," Mr. H. remarks, "is a disease which in this age of specialisms is very apt to be pushed to the wall. It is nobody's child. Dr. A., writing on rheumatism, does not mention the eye, and Mr. B., writing on the eye, dismisses rheumatism with contemptuous brevity. Yet an attack of this form of disease is not pleasant to bear, and many a patient would thank his surgeon if he had any efficient plan for its relief, and still more if he could say anything as to its prevention.

"Our ophthalmic investigators during the last twenty years have by no means been idle. Their attention has, however, been absorbed by the cultivation of new fields. The splendid revelations of the ophthalmoscope, the enticing problems as to accommodation and refraction, and the pursuit of pathological histology, have presented attractions which have led to a very natural, but yet undesirable, neglect of topics less novel and perhaps more vague. The result of this has been that, so far from the knowledge of the modern ophthalmic surgeon being better developed than that of his predecessors, in reference to the subject of my Report, it is in fact decidedly less so. Another circumstance has also contributed to throw arthritic iritis, etc., into the shade. I allude to the greatly increased willingness shown by modern pathologists to acknowledge syphilis as the remote cause of all kinds of morbid phenomena. To such an extent has this gone, that some intelligent observers are accustomed to receive the diagnosis of "arthritic iritis" with the utmost distrust, secretly believing that, if the truth could be got at, the iritis would be found, as usual, to be of syphilitic origin. For myself, I by no means share the suspicions to which I have just alluded. I believe most confidently that iritis due to the arthritic diathesis is a common malady, and that very many cases treated as syphilitic are really arthritic. I believe, further, that it presents several varieties of form, attended by clinical differences quite sufficient to permit of their being told out into separate groups with convenience to the surgeon."

49. *Lesions of the Retina in Albuminuria*.—M. GALEZOWSKI, in a communication made to the *Société Médicale d'Emulation*, January 6, 1872, maintains that there are two kinds of lesion of the retina in albuminuria—inflammatory lesions and those produced by fatty degeneration. He exhibited representations of each kind of lesion, and related many cases of albuminuria retinitis which were cured.—*L'Union Médicale*, Aug. 27, 1872.

50. *Condition of Vision in very Young Infants*.—Dr. L. CUGNET gives the results of his observations on the vision possessed by young infants. He thinks that the function of sight is progressive, being only imperfectly exercised for some months, and that the eye is very susceptible to light, this susceptibility passing off very slowly. He has carefully experimented on two infants. The whole of the first day after birth was passed in uninterrupted sleep. The

second day the baby opened its eyelids, but shut them and began to blink on exposure to the light from a window, but again opened them and looked about when its face was turned from the light. If he were exposed to a moderate light he would open first one eye and then the other. If both were open he squinted with one, more frequently the left (convergent squint). On the sixth day he seemed annoyed by prolonged removal from the light, and would be quite still if a candle were lit and thus surrounding objects dimly seen. On the eighth day his sleep became interrupted by intervals of half an hour or an hour, during which he seemed to look steadily at objects with an air of consciousness. It seemed evident that his intellect was beginning to be developed, for his hands moved towards an object at which he was looking as if with a confused intention of touching it. Daylight still compelled him to shut his eyes. When a lighted candle was held at a distance of from six to nine feet he would look at it steadily; if the candle were brought nearer (at two feet or one and a half, or one foot) he squinted extremely, and, in spite of his wish to look at the flame, which pleased him, he was obliged after a while to close his eyes. There was photophobia therefore, inducing a squint in order to remove one eye from the light. On the twentieth day the baby could open its eyes better and look about by rolling the eyes without moving the head, but its look had neither expression nor precise intention. It always feared a full light and squinted strongly when exposed to it. It slept more in the daytime than at night, probably because of the susceptibility of the sight and the rapid fatigue which resulted even from a short exercise of the power of vision, forcing it to close its eyes and yield to the torpor due to the absence of all sensorial impression. He would remain awake for a long time at dawn, and in the twilight would stir himself, cry out, and look about him and stretch his hands out towards objects which he perceived. It was suspected that his range of vision was limited, and that he could not see with the peripheral portions of the retina, that is, that he could only see for a short distance and straight before him. As he already took some notice of the flame of a candle, an attempt was made to confirm the above suspicion. It was found that in a dimly lighted room he would look attentively at a candle held before him at a distance of from three to six feet, but if this were suddenly moved a yard in any direction he ceased to see it and looked vaguely in other directions. If he happened accidentally to look in the right direction he would then "fix" anew, or if the candle were brought back to its original position he saw it again. He lost sight of the candle in whatever direction it was moved, even though its position had been but slightly altered. Moreover, when the candle was moved to a distance of nine, twelve, or eighteen feet straight in front of him, the baby could not see it. If it were brought back to a distance of six or nine feet he again saw it. If the candle were brought nearer (eighteen inches or less) convergent strabismus, winking, and finally closure of the eyelids followed. It would appear that the state of the vision is in accordance with the state of cerebral development; that the infant has, from its birth, a very marked power of convergence, which is the principal agent in the production of permanent strabismus at the same time that the excessive sensitiveness of the retina is its primary cause. It is to be added, that, when this sensitiveness is continually excited by an abnormal condition of ocular refraction, hypermetropia (much more common in the young than myopia), the photophobic convergent strabismus, becomes very manifest and remains permanently.

On the twenty-eighth day after birth it was noted that the baby desired to be carried about whilst awake, and would remain awake for an hour or two, and would look about with some sort of curiosity, unless it was exposed to strong daylight or sunlight. It opened its eyes widely and did not blink. On the thirty-sixth day he was taken out of doors, and could bear the light. If, however, he looked at a light which was close to him, or even at any object closely, he still squinted. He did not recognize any one by sight, it did not matter to him who took him and carried him about, but he knew his mother's voice. It was not till the sixtieth day that it was certain that he recognized his mother by sight. He would look at her attentively and smile at her, but not at any one else, and he did not like strangers. It pleased him to see the large

flowers on a curtain and to be carried about in a well-lighted passage. At the age of two and a half months he could not "fix" an object at twenty feet distance, and all attempts to attract his attention by a light held on one side were unavailing. If a noise were made on one side of him, he would attempt to turn his eyes and his head to that side. At the age of three and a half months it was evident that he had a larger field, and he would watch the movements of his brothers playing at a considerable distance.

At the age of four months it was still evident that his sight was not fully developed either in a direction straight before him or laterally.

One means, amongst others, adopted to test this was, to attract the child's attention while he was seated on his mother's arm, and get him to look at some one stationed behind his mother, the child looking on one side of his mother's head.

If then the person behind moved to the other side, the child lost sight of him, though the actual lateral movement was very slight. It was not till the age of five months that the field of vision seemed nearly normal. He now seemed to have sufficient muscular power to hold his head up and turn it wherever he wished. At six months it seemed quite evident that he could see widely and at a great distance.

There was no photophobia. Parents and nurses often say that squints have been caused by exposing babies in their cradles to too strong a light, but the permanent squint is generally not observed till the age of one or two years, and hypermetropia is generally present.—*Royal London Ophthalmic Hospital Reports*, July, 1872, from *Annales d'Oculistique*, Sept., Oct., 1871.

51. *Tinting or Tattooing Opacities of the Cornea*.—The unsightly appearance of leucomata, or incurable dense opacities of the cornea, is often a source of annoyance and mortification, especially to females. M. WECKER has practised a method of concealing these unsightly opacities, which has met with much favour and been successfully resorted to by various ophthalmic surgeons.

Dr. CHARLES BELL TAYLOR of Nottingham, in a communication read before the Surgical Section of the British Medical Association in August last (*British Medical Journal*, September 7th, 1872), states that the operation, "which, as a rule, causes very little pain or irritation, is best performed with a number of the finest needles firmly bound with the points on a level around a handle such as a penholder, or a large needle which has been grooved for the purpose by Messrs. Weiss may be substituted with advantage in certain cases. The substance which M. Wecker recommends for tinting is Indian ink; but I have also employed sepia, ultramarine, and other colours with advantage, and, when an immediate and deeply coloured effect has been desirable, a combination of lamp-black with Indian ink, and a solution of nitrate of silver. The patient may either recline or be seated in a chair, and it is well to separate the iris with a speculum and steady the globe with a pair of ordinary forceps, taking a firm grasp of the conjunctiva. The needles are then dipped in one or other of the solutions in question, which should be made as thick as possible, and the superficial layers of the cicatrix are rapidly punctured in an oblique direction, and layers of the solution applied just as in ordinary tattooing, until the white speck is changed from a most apparent deformity into a black surface scarcely visible; a fresh layer of the substance is then applied over the tattooed cicatrix, the patient is directed to keep his eyes open, so as to let it dry on and remain as long as possible, and he may at once go about his usual avocations.

"It is important not to close the eye, and to prevent, as far as possible, the washing away of the pigment by the tears; this is best accomplished by enveloping the operator's fingers with a silk handkerchief, so as to mop up the secretion, and afterwards by the avoidance of winking on the part of the patient. M. Wecker is content with ten or fifteen punctures at a time, and requires from his patients four or five sittings. I have, however, usually completed the operation at once, and made any little addition that might appear necessary some weeks later; the slightest specks, such as are left after phlyctenular conjunctivitis and small ulcers of the cornea, are easily banished by one or two pricks of the needle; and when the whole eye has been opaque, very unsightly, and sight com-



pletely abolished, I have very advantageously substituted extirpation of the globe, or the superimposition of an artificial eye, by tattooing a round central pupil so as to restore to a remarkable and most charming degree the natural appearance of the globe. Not only is deformity removed by this slight operation, but the patient's sight is improved, a fact due, no doubt, to the fact that the black speck is much less dazzling than a white one.

"In cases of large cicatrices, I generally make an artificial pupil first, and tint the opacity afterwards; and, when this is carefully done, it is difficult to distinguish the black speck from the neighbouring artificial pupil. I have no doubt that this little operation will also be found of service in cases where considerable dazzling follows the removal of a portion of iris, either *per se*, or when the operation has constituted a part of the operation of extraction for cataract; as by tattooing the cornea an invisible opacity may be occasioned which will constitute a permanent shade, and shut out the light to any required extent; soft cicatrices are readily coloured, but old, hard, and incrustated ones are more difficult of treatment. In these cases, the nitrate of silver and lamp-black are of service; no doubt, also, lead, sulphur, charcoal, gunpowder, and other ingredients will come to be employed in time. In some cases, the coloration is not very permanent, but it may always be repeated; and, even if the perfect blackness do not remain, a grayish semitransparent coloration takes its place, which looks very like cornea, and it is infinitely preferable to the original deformity.

"It is well to commence the tattoo at the lowest surface to be operated on, in order that the operator's sight may not be obscured by an overflow of the liquid." Dr. Taylor concludes by quoting a case in which this addition to our armamentarium enabled him to render a real service to a young lady who was suffering not only from loss of sight, but also from a most embarrassing deformity.

Mr. C. S. TICEHURST, dresser to the eye department of Guy's Hospital states (*Lancet*, May 4, 1872), that this tinting operation has been performed many times in the hospital, and with the most satisfactory results. He thinks that the tattooing made with the ordinary needles looks better than when made with the grooved ones, and that M. Bader has tried them and approves of their use. "As to the depth to which one pricks in the corneal epithelium, it is only necessary just to enter it, and it requires more force to do so than might be imagined." There is little after-treatment required; no bandage is required; the eye may be bathed in water if uncomfortable, and the patient directed to use his eyes freely.

## MIDWIFERY AND GYNÆCOLOGY.

52. *Long Delay of Labour after Discharge of Liquor Amnii*.—Dr. MATTHEWS DUNCAN read a paper on this subject before the Obstetrical Society of London, June 5, 1872.

A patient was expecting her confinement in June, 1872. On the 10th of March there occurred during the night a copious flow of liquor amnii, and slight irregular pains were felt. The liquor continued to discharge freely, but not constantly. The uterus gradually diminished in bulk, and in a fortnight's time it felt not much bigger than a large adult foetal head. On the 25th of April regular pains came on, and the child was born alive, but survived a very short time. There appeared no doubt that pregnancy continued for forty-five days after the discharge of some of the liquor amnii; and the foetus continued to live for several weeks in a very contracted uterus. The author considered that the hypothesis resorted to by Burns in explanation of such cases, that the torn membranes may be healed, was not only without rational grounds, but contrary to all we know. Among the conditions which may be mistaken for premature evacuation of liquor amnii Dr. Matthews Duncan mentioned discharges of urine, watery discharges, such as are sometimes observed in virgins, and whose source may be Cowper's gland or the cervix uteri, discharges from the uterus of a fluid occupying the anatomical position of hydroperionic fluid, discharge of liquor chorii, discharge of the liquor amnii of one ovum, discharge

of the fluid in a cyst described as occurring between the chorion and the amnion. In the above case, however, that the discharge was liquor amnii was proved by the subsidence of the uterine tumour, by the diminution of its bulk, by the increase of its hardness, by the complete absence of discharge of liquor amnii at the time of labour, by the compressed state of the child, and by the almost complete rubbing off of the vernix caseosa. Here the discharge of liquor amnii in occasional gushes took place till labour came on; and long after it was evident that the uterus had been for the time as completely evacuated of this fluid as it could be. But this circumstance was easily explained by the accumulation of newly secreted liquor amnii. Winkler's researches proved that the amniotic membrane has the power of secretion and absorption in a high degree. The author believed that firm compression of the foetus may take place without active uterine contraction; and it is firm compression by active uterine contraction that is incompatible with continuance of pregnancy, or of foetal life, not such mere firm compression as is seen in a case of missed miscarriage or missed labour. The explanation of the partial and repeated discharges of liquor amnii by a high position of the rent in the membranes, and some sort of valvular action, seemed to the author chimerical. The great question suggested was, why do conditions which generally induce labour fail to do so in these rare cases? In our present state of utter ignorance as to the cause of the coming on of natural labour, it is not to be wondered at that we cannot tell the cause of its failing to come on. It is highly probable that he who discovers the cause of the coming on of natural labour will also be able to explain why in these abnormal cases labour does not come on.

Dr. SNOW BECK mentioned the case of a lady who, when six months pregnant, had a copious discharge of clear watery fluid. Labour came on at the natural term, and there was no escape of liquor amnii. Also another case, in which at the fourth or fifth month there was a sudden discharge of two or three quarts of perfectly clear fluid, which continued more or less all night. This recurred every evening (except during one week) for ten weeks, when she was prematurely confined, and died from hemorrhage two hours after the removal of the placenta. Dr. Beck believed this to be an exudation from the vagina, and perhaps the great venous congestion was relieved by rest during the night and again increased by being about all day. He did not think that either set of glands in the uterus was involved in its production.

Dr. BARNES believed that hydrorrhœa, especially in early pregnancy, resulted from a hypertrophied condition of the glands of the uterine mucous membrane, and this might explain Dr. Beck's second case. He did not believe in the rupture of the membranes and the rent healing. He might offer a speculation in relation to the cause of labour. Why labour did not so readily come on under provocation before the natural term of gestation was because the nervous centres had not yet attained that remarkable degree of irritability which characterized them at full time. There was a less ready response to excitomotory stimulus.

Dr. RASCH said he found the characteristic smell of the liquor amnii a very valuable help to diagnosis in cases of alleged discharge of the waters.—*Lancet*, June 29, 1872.

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53. *Portion of Placenta thrown off in Pregnancy.*—Dr. EVOY KENNEDY related, in his address to the Section of Midwifery of the British Medical Association, at its recent meeting, the following remarkable case:—

A lady, in the seventh month of her fifth pregnancy, was seized with hemorrhage, ascribed to over-exertion. There were no labour-pains. On examination, a portion of the placenta was found protruding through the os uteri. The hemorrhage continued for several days, but to no serious extent; and still there was no labour. At length, fetid grumous discharges, mixed with a little blood, occurred, attended with sense of downward pressure. The portion of placenta descended lower in the vagina; its connection with the interior of the os separated; and I removed it with very little assistance. As no increase of hemorrhage occurred from this, I thought it unnecessary to plug the vagina. The hemorrhage and discharge ceased, and the patient went on without any

inconvenience, except the precaution of keeping the horizontal position for six weeks longer, when she was delivered of a living boy apparently at or near the full time. The edge of the placenta that remained could not be felt near the os, and the portion that came away consisted of the vascular structure without the reflected membranes. There was no discharge of liquor amnii until the labour set in.—*British Medical Journal*, August 10, 1872.

54. *On Version and Uterine Tetanus*.—Dr. ALEXANDER MILNE, in an interesting communication (*Lancet*, August 10, 1872), remarks:—

"The operation of podalic version, where the pelvis is of average size, the os uteri dilated, and the membranes entire, is one of easy performance; but, where the liquor amnii is absent or has long escaped, where the parts have become swollen and dry, and the uterus has contracted firmly around the fœtus, we have the conditions of difficulty and even of danger. The difficulty is greatly enhanced if the contraction of the uterus happens to be tonic or tetanic, a condition that not very rarely obtains. I have seen not a few such cases, and where the contained body was grasped so firmly that extrication appeared a hopeless task, the idea of version almost utopian, and extraction by craniotomy or spondylotomy the only hope—a sorrowful one indeed! This tetanus of the uterus I have observed occasionally to mark the entire organ; at other times, and oftener, it appeared to be partial, a common place for it being the internal os, less frequently the external os. Sometimes it consists of narrow bands in some part of the cervix, having all the rigidity of a ring of iron. Whether partial or general, it grasps the fœtus with immense power, and, uncombated, renders turning utterly impracticable. I ought also to remark that, though more common in the absence of the liquor amnii, it yet occasionally exists prior to the breaking of the membranes, and indeed is a cause of their premature rupture.

"Now, when we meet with a case of this kind, where the uterine contraction is continuous or tetanic, intense, extreme, and grasping the child as in a vice, what ought to be done? Chloroform, of course, must be administered, and very freely, too; and often it relaxes the spasm in a wonderful manner, but I have seen it fail frequently in uterine tetanus—nay, it usually fails in such cases. There was an impressive case, in illustration of this, reported to the Edinburgh Obstetrical Society, in November 1865, by Dr. Inglis, and where the late Sir James Simpson had to perform spondylotomy. "The patient," says Dr. Inglis, in his report, "had been kept deeply under the influence of chloroform for two hours, yet the uterus remained nearly as firmly moulded to the body of the fœtus as before." Chloroform then being inadequate to the relaxation of this spasm, have we any other means or appliances of a more powerful kind? We have, and they are tartarated antimony and lobelia inflata. When the chloroform is ineffectual, recourse should be had to these. Give a grain of the antimony, and twenty-five minims of the tincture of lobelia inflata; afterwards, on the lapse of twenty minutes, place the patient under the influence of chloroform. The triad form a potent antispasmodic whose conjoint action is almost irresistible, and the spasm is overcome. The uterus relaxed, the hand now finds entrance, and version becomes a possible thing. I am convinced that reducing instruments may often by these means be stayed.

"*Hand to be employed*.—Now, what hand ought we to employ in these extreme cases? This is a deeply important question, and one whose gravity we can scarcely overrate. A somewhat uncertain sound has been given forth on this question; some recommending one hand, some another, while others have ignored the thing altogether. The majority recommend the right hand, which (I say it advisedly) is the wrong one. (I must except Meigs, Lee, and Ramsbotham, who are orthodox on this matter, and have risen to the height and gravity of it.) The left hand, in the great run of cases, is the proper one to employ; and I hereby deliberately impeach the right one with many failures; with deplorable craniotomies and spondylotomies, not to speak of maternal injury. Almost any hand will succeed where it can float in abundant waters, and where there is a roomy pelvis; but in the more difficult cases, where space is scant and the parts are tumefied, commend me to the left one. It is the

proper one in all dorso-anterior cases; and we shall succeed better with it even in dorso-posterior ones where there is fluid and space. The grounds for preferring the left hand I stated in *The Lancet*, October 15th, 1870, and have noticed them also in my work on Midwifery; I need not, therefore, take up space by reiterating them. I would only again repeat as forcibly as I can, Cultivate the left hand in version if you wish to avoid failure—nay, if you wish to conserve life. I have been baffled with the right hand; but I am happy and proud to say that I have *never* failed to turn with the left.

"*Shall we seize one leg or both?*—There is only another point in connection with this subject to which I would shortly refer, and that is in regard to the leg or legs to be grasped. In those difficult cases, to speak paradoxically, we can neither afford to seize both nor to want both—that is to say, there is little room to enable us to get hold of both, but it is better to have them if at all possible. The fœtus will then revolve more readily, and come down more speedily—nay, neither evolution nor descent may be accomplished if only one extremity be seized, as was seen in Case 6. Of course I allude to the extreme cases. More especially is it of importance to attend to this where the head is the presenting part. M. La Chapelle called attention prominently to this, and my experience of version warrants me in placing considerable emphasis upon it."

55. *Post-mortem Parturition*.—Dr. AVELING read before the Obstetrical Society of London (July 3d, 1872) a paper on this subject. He referred to forty-four cases of the kind, and from these deduced the following conclusions: 1. Expulsion of the contents of the uterus may take place after death without the aid of art. 2. This may occur in cases in which no symptoms of natural parturition can be discovered before death. 3. Many of the manœuvres and accidents which take place in labour during life may occur in post-mortem parturition, such as expulsion of the placenta, spontaneous evolution of the fœtus, and prolapsus, inversion, and rupture of the uterus. 4. Expulsion of the uterine contents and accidents which accompany labour may be caused after death either by the contracting power which persists in the uterus after the death of the rest of the body, or by the pressure exerted upon the uterus by gases of decomposition pent up in the abdomen. 5. Of these causes the latter is the more frequent. 6. After the death of its mother a child may continue to live in the uterus for many hours. 7. After the death of a woman undelivered, no time should be lost in removing the fœtus.

The President observed, that, if we called in rigor mortis to explain the post-mortem parturition, we must also remember that rigor mortis would also affect the rigidity of the passage. The question would then be, does the uterine rigor last longer than that of the passages?

Dr. SNOW BECK said that some of the older cases of the kind should be accepted with some doubt as to their accuracy. Dr. Beck then described a case of partial expulsion of the child after the death of the mother, which he had himself noticed.

Dr. MADGE said it was an important point how soon after the death of the mother one would be justified in opening the womb to save the child. In one case of convulsions Dr. Madge did this twenty minutes after death, but the child was dead. There were no signs of uterine action after the mother's death, and on removing the child the uterus remained in its uncontracted state.—*Lancet*, July 27, 1872.

56. *Report of Private Obstetrical Practice for Thirty-nine Years*.—Dr. FLEETWOOD CHURCHILL presented to the Dublin Obstetrical Society a summary of his private practice, based on facts entered in his case-books at the time when they came under observation. In the period from January, 1832, to December, 1870, inclusive, he had attended 2547 cases of labour, exclusive of abortions and premature births before the seventh month. The labours were most frequent in April, and least so in February. In 2540 cases there were 1290 male children, and 1250 female; and the deaths numbered 130, or one in 19.54. There were sixteen cases of twins, with eleven deaths; and one case of triplets. In forty-seven of the 2547 cases labour was protracted beyond twenty-four hours.

In seven cases the second stage exceeded ten hours in duration. No death occurred in instances either of prolonged second stage or of tedious labour. The third stage was five minutes in 1965, and an hour in only eight cases out of 2387. *Post-partum* hemorrhage occurred three times, and once ended in death. Dr. Churchill had never known hemorrhage to occur when firm grasping was applied to the uterus immediately after the child was born, causing it to contract rapidly and to expel the placenta into the vagina. The length of the funis varied from about fifteen to fifty-seven inches. In 2565 children the following presentations were met with: superior extremities, six times; breech, forty-nine times; foot or knee, eighteen times; face, four times; forehead towards pubis, twenty-one times; prolapse of funis, eight times; hand or arm with head, seven times; foot and hand, once in a putrid child; spontaneous evolution, once. Of complex labour there were, one case of convulsions; five cases of accidental hemorrhage (with two deaths among the children, and one among the mothers); two of unavoidable hemorrhage (two children lost); one case of *præ-partum* internal hemorrhage (child lost); one of *post-partum* hemorrhage (fatal to mother); one of rupture of uterus (fatal in twenty minutes), came under observation, besides a few cases of laceration of the perinæum, eight cases of prolapsed funis, and three of puerperal mania. As regarded operations: version was employed on seven occasions; the forceps cases numbered forty two, or one in sixty and a half, with three deaths; and craniotomy was performed seven times, the mothers recovering in four cases. The deaths, after the last-mentioned operation, were caused by convulsions (for which the operation was performed in the hope of saving the mother), by hemorrhage, and by phlegmasia dolens. In the 2547 cases the maternal deaths amounted to seventeen, of which puerperal fever caused eight. The paper concluded with an enumeration of the malformations met with among children.—*Brit. Med. Journal*, July 13, 1872.

57. *Vicarious Menstruation by Means of Epistaxis*.—Dr. OTTO OBERMEIER relates an instance of this occurring in a servant, aged 24. The first catamenia appeared at 15, and were very profuse. Epistaxis occurred the following month, and appeared regularly for several years, until she became pregnant in March, 1870, when it ceased, but again returned six weeks after parturition, and continued regularly for some time. She was not so freely, when conception again took place. The epistaxis occurred three days, and was accompanied by malaise, feeling of giddiness, *muscæ volitantes*, etc.—*Brit. and For. Med.-Chir. Review*, July, 1872, from *Virchow's Archiv*, Bd. 54, 1872.

58. *The Administration of Ergot in Diseased States of the Heart*.—Dr. JAMES THOMPSON, in a communication to the Midwifery Section of the British Medical Association, related two cases in which it was deemed expedient, after consultation, to administer ergot freely. In both, the pressing symptoms, which pointed to ergot, were relieved; but, immediately after delivery in one, the heart seemed to lose power, the pulse faded away, and, notwithstanding powerful restoratives, the patient died in three hours. No *post-mortem* examination was permitted; but there was a history of previous syncope at repeated intervals. The other case was one of miscarriage at an early date, and ergot was given to check the flooding; but after a few doses the cardiac action became so much impeded that the ergot was withdrawn. Dr. Thompson expressed his opinion that in these cases the ergot acted with paralyzing force on the maternal circulation, already weakened. The cases seemed to be warnings to administer ergot with great care in persons of feeble cardiac power.

Drs. Henry Bennett and Simpson thought that the evidence was incomplete that the ergot induced the collapse.—*Brit. Med. Journ.*, August 24, 1872.

59. *Diagnosis of Incipient Cancer of the Neck of the Uterus*.—Prof. SPIEGELBERG states, in the *Arch. f. Gynæc.*, vol. iii., part 2, that in the incipient stage a distinction between cancer and simple induration of submucous cellular tissue can easily be made in the following manner. The mucous membrane, in cancer,

will be found firmly glued and immovable, which is not the case in hyperplastic thickening and induration, and when the sponge-tent is introduced, the latter thickening will become looser, softer, and thinner, whilst in cancer the neck remains hard and unyielding.—*The Lancet*, July 20, 1872.

60. *Subcutaneous Injection of Ergot in Fibroma of the Uterus*.—In an interesting communication to the *Berliner Klin. Wochenschrift* (No. 25), Prof. HILDEBRANDT, of Königsberg, draws attention to the utility of "subcutaneous injections of ext. secal. cornut. in fibroid affections of the uterus." His attention was first drawn to the subject in 1870 by the case of a Polish woman, 33 years of age. This he narrates with considerable details, for which we have not space. Suffice it to say that she was the subject of a large fibroma of the uterus, of the diagnosis of which there could be no doubt; and that this, of three or four years' standing, yielded to none of the usual remedies which were successively tried. It was therefore determined to have recourse to ergotine injections, with the view especially of moderating the profuse hemorrhages, and perhaps of forcing the tumour to within an accessible distance of the os uteri. They were thrown into the cellular tissue of the walls of the abdomen covering the tumour daily during a fortnight. They were suspended during menstruation, and after this (which was less painful and profuse) had ceased the patient stated that the tumour had diminished. On measuring it this was found to be the case, and the daily use of the ergot was resumed. From week to week the tumour was found to lessen, until, fifteen weeks altogether having been passed in the treatment, all vestige of it had disappeared.

Such success in a case which had been regarded as incurable naturally led to other trials of this means, and Professor Hildebrandt refers to eight cases, concerning the exactitude of the diagnosis in which he has no doubt whatever. With the exception of two of these cases (in one of which ergot intoxication occurred, and in the other great pain was produced by the injection), they all underwent improvement, both as regards diminution in the size of the tumour and in the accompanying menorrhagia and pain. Dr. Hildebrandt observes, that, if fibroma or myoma of the uterus is not usually an affection immediately dangerous to life, yet it always entails great suffering upon its subjects, and very often, by the profuse menorrhagia to which it gives rise, induces the extremest anæmia, which not infrequently proves fatal. We must not deceive ourselves with respect to the curative effects which the waters of Kreuznach and Franzenbad, etc., are supposed to exert on uterine fibroids, for, according to the author's experience, such effects are exerted on the accompanying exudation, rather than on the fibroid itself, which at most undergoes only some diminution. Operations, too, in these cases are also very rarely possible, and are always attended with very great danger. We may therefore hail this new means of treatment, as exhibited in these examples, as not only a very efficacious but also as a simple procedure, devoid of danger. A tumour of large circumference, reaching above the navel, totally disappeared, and another, reaching the edge of the ribs and distending the abdomen, became greatly diminished. The diminution of the tumors which took place in four other cases renders it highly probable that complete success would here have been attained also, had not the patients from various causes ceased pursuing a mode of treatment which consumes much time. Of equal importance is the complete disappearance of the profuse hemorrhages, the debilitating serous discharges, and the severe pains.

These observations do not enable us to speak with any certainty as to the *modus operandi* of the ergot. Probably in part from the contraction of the nutrient vessels of the tumour, and in part from its general compression under the contractile action of the walls of the uterus, the nutrition of the tumour becomes defective, and its degeneration and absorption ensue. The author suspects that intra-uterine tumours will be found more amenable to this action of ergot than sub-peritoneal, and myoma more so than fibroma. With reference to the mode of employing the ergotin, the following points require attention: 1. The solution, which is thrown in by means of a Pravaz syringe, is composed of three parts of watery extract of secale cornutum to seven parts of distilled water

and seven parts of glycerine, this causing much less pain than Langenbeck's alcoholic solution, and not giving rise to any suppuration. It may cause little, somewhat tender indurations, which are long in disappearing; but so little pain is caused by the procedure that the patient is able to return home immediately after the injection has been made. 2. The lower portion of the abdomen is very much more sensitive to the injection than the parts near the navel. 3. At the time of menstruation, as well as shortly before and for a few days after it, slight hemorrhage follows the punctures. 4. After from ten to fifteen daily injections have been practised, the solution flows out again from the orifices. It is therefore necessary at this time, as well as during menstruation, to apply a piece of wadding, wetted with collodion, immediately after the injection has been made.—*Med. Times and Gazette*, July 27, 1872.

61. *Gastrotomy in Cases of Fibrous and Fibro-cystic Tumours of the Uterus and Spontaneous Absorption of a Uterine Fibroid*.—M. PÉAN contributes (*Gaz. des Hôp.*, Nov. and Dec. 1871) some cases of great interest in which gastrotomy was performed. He considers the operation to be only justifiable—

a. When serious symptoms are produced on account of the great size of the tumour and its pressure on the surrounding parts.

b. When there is profuse metrorrhagia imperilling the life of the patient.

c. When the presence of the tumour causes intolerable pain either in the abdomen or inferior extremities, thereby entirely destroying the patient's comfort in life.

In suitable cases he believes the difficulties and dangers not to be greater than in ovariectomy. In two of the three cases in which M. Péan operated successfully there were large intra-uterine fibroids, the removal of which necessitated the removal also of the greater portion of the uterus, both ovaries, and the Fallopian tubes. The third tumour was found to have only slight uterine attachments, and the organ was therefore left untouched. In the two cases of uterine fibroid the abdominal incision reached from the pubes to above the umbilicus, and was found to be sufficiently large to allow the bulk of the tumour to be extracted through it. The bulk of the tumours was excised after their base, which formed a narrowish neck, had been transfixed by a double metallic ligature, which was firmly held on either side. The third was an enormous fibroid, apparently originating in the right broad ligament, but filling the whole abdominal cavity, and being extensively adherent to the surrounding structures in every direction, but so complicated were these adhesions that the operation lasted upwards of three hours. The patient, however, made a perfect recovery.

M. Péan has also operated on two cases of fibro-cystic uterine tumour. One of these has been previously published; the second was operated on during the siege of Paris, and under the most unfavourable conditions. The whole uterus was removed. The patient, however, made an excellent recovery.

M. Péan incidentally relates the particulars of a case of spontaneous absorption of a uterine fibroid. The tumour was of enormous size, and filled nearly the whole abdominal cavity. Five years ago M. Péan saw the lady in company with other medical men, and the nature of the tumour was carefully ascertained. Last June he again saw her, and found that the tumour had entirely disappeared.

M. GUÉNOT maintains (*Union Méd.*, March, 1872) that the frequent examples now recorded prove that spontaneous absorption of fibroid tumours of the uterus does occur. The tumours, he says, seem to disappear by a process of fatty degeneration of their structure. Remedies known to favour fatty changes, such as arsenic, phosphoric acid, etc., are therefore indicated.—*Brit. and For. Med.-Chir. Review*, July, 1872.

## HYGIENE.

62. *Hospital Atmosphere*.—Dr. EVORY KENNEDY, in his address to the Midwifery Section of the British Association, made the following remarks:—

"I hold that the congregation of a number of patients in common chambers generates what we term a hospital atmosphere; that this hospital atmosphere is, or more properly becomes, a poison; that, by a persistence in the causes of its production (with which we shall presently deal), it undergoes a process of what may be termed cumulation, pervading every part of an inclosed building, until it eventually arrives at a stage which we may term saturation, when the whole hospital is charged with a poison capable of seizing upon those who are susceptible to its influence, or who are in what we term a state of receptivity.

"Now, from this it will be seen that, by crowding patients in a hospital, we are actually exposing them to a new disease generated by the very means we adopt to cure them of the disease under which they chance to labour. But, unfortunately, the new disease is generally one most fatal in its character, as few there be who survive it.

"The characters or phases of the hospital disease vary under different circumstances of the victims susceptible to it. Thus one may be attacked with blood-poisoning or empyema; another with erysipelas; a third with hospital gangrene; and a fourth with metria or puerperal fever. The laws which regulate the habits of this family of zymotic disease are perhaps best arrived at by a study of the last named poison, as, in its occurrence in our great lying-in hospitals, where it principally commits its ravages, it is less exposed to disturbing influences, and consequently pursues its own natural course free from interruptions and complications.

"Out of a hundred and eleven years, for which the great Dublin Lying-in Hospital has been established, it has been haunted by puerperal fever ninety-three years. For twelve years it has been comparatively, and only for eight years has it been totally, free from this fell disease. The deaths of those admitted for the last years amount to 1 in 33. Let us remember that in three small cottage hospitals in Ireland, in which accurate tables have been kept (Killkenny, Newry, and Waterford), we find that the mortality has been 1 in 282. On the comparison of these two proportions, the conclusion is inevitable that eight out of nine patients have died in the Dublin Lying-in Hospital who would not, in all likelihood, if they had taken refuge in the cottage hospitals, which were comparatively free from the hospital miasm or poison that prevailed or lurked in the great unhealthy hospital.

"A fatal error, into which we are prone to fall, is the confounding epidemic and endemic disease; and the amount of loss of life that has occurred from this error I believe to be incalculable. This will be easily appreciated when we state that what, in strictness, we should call true epidemic diseases, are unavoidable; whilst the latter, or endemic diseases, are, with rare exceptions, preventable and perfectly within our control. True, they may be convertible; but this makes the distinction the more important, in order to prevent their extension or fixture.

"The contagious nature of hospital miasm is now beyond question; as also that of most of those modifications of hospital zymotocene with which we are familiar, especially metria and erysipelas.

"Having satisfied ourselves that a poison is generated by the mere crowding of numbers of patients into a common atmosphere, and also that this poison spreads by contagion, the next principle or law we require to establish is that this poison is cumulative, or developing in its quantity, commencing with a single poisonous emanation, and increasing in its quantity until the atmosphere, walls, floors, and furniture become imbued or charged with it. Unfortunately, as yet we are unable to detect this miasm or poison and display it by its sentient properties; but of its existence we cannot have the slightest doubt, from its effects, from its laws, from analogy, and especially the spread of diseases by inoculation and contact.



"But why should the hospital wards ever be free from hospital miasm and these fatal results, if all this be true? This is a question to be answered by the law upon which we now dwell—cumulation. The ordinary epidemic disease appears; having, as we say, worn itself out. This it does in hospital as out of it. Precautions are taken; patients zymotically affected are separated; ablution and ventilation are carried out; admissions are refused; the wards are emptied; and the hospital becomes healthy. Weeks, months, and longer, pass over before the poison again shows itself. The cumulative process, however, is in steady operation; and at an uncertain period the poison again shows itself, and snatches up its victims. The same measures of precaution are taken to banish it, and with the same results. But it does not rest here, as has been abundantly proved by the history of our great hospitals. When the cumulation has gone on repeating itself again and again, a further stage, or that which I shall denominate the stage of complete saturation, is arrived at, and then the hospital becomes the fixed *habitat* of the poison.

"The death of the consumptive costermonger is not to be placed in the category of the victims to hospitalism. It has its analogue in the dog slain in the Grotto del Cane for the instruction of his slayers, by holding him so close to the surface of the deadly cavern that he can only inhale mephitic gas. Nor, indeed, is it only in St. Pancras that we have this going on. Have we not our No. 11 wards and grottoes in nightly operation for the benefit of the upper ten thousand in the West-end *réunions*. Witness the pallid and poisoned state to which our belles are reduced, at the end of the season, from breathing mephitic and animal-poisoned air for several hours nightly, with their lungs at nearly as great a disadvantage as the costermonger's, by tight lacing and waltzing. The Black Hole of Calcutta and the middle passage rendered our fathers familiar with the more immediate effects produced from a number of people breathing and rebreathing the same atmosphere; and its more gradual effect in the production of jail-fever, grappled with by Howard in his mission of mercy, has reached us as a matter of history. We were in hopes that the labours of Boswell Reid and Arnott had exposed the defects of ventilation and directed a remedy. But the enormities occasionally cropping up from neglect in this respect show that much remains to be done. Dr. Farr, in a paper lately read at the Leeds Conference, pointed out the want that exists of an authoritative organization charged with the ministry of public health. As it is, what is every man's business is left undone. When will our legislators waken up from their piecemeal attempts at sanitary improvement, and grapple with this great subject as it demands, and as the well-being of the community requires?

"The fact is that, when the poison is generated, crowding or the co-habitation of patients in a state of receptivity secures its spread. A process of cumulation of the contagium or poisonous element occurs; and when this arrives at the stage of saturation, outbursts of erysipelas, phagedæna, gangrene, pyæmia, and metria occur; the patients are attacked wholesale; and the diseases become, as we before stated, endemic or fixed, and continue to haunt the hospitals, be they surgical or obstetrical.

"Now that the blot has been hit, it requires no great philosophy to meet the difficulty. Simply cease to crowd such patients into common buildings under the same roof. All the advantages of an asylum can be afforded whilst segregation is secured, and facilities for medical instruction preserved to the schools. The substitution of cottage-hospitals for these great hotbeds of contagion should be insisted upon in all future arrangements for housing cases liable to endemic poisons. The term epidemic should be applied in its true meaning. These large surgical and maternity hospitals, in which metria, erysipelas, and pyæmia have committed such havoc, should be either applied to purposes compatible with the safety to human life, or so altered in their construction as to isolate each ward from the common atmosphere now pervading the whole hospital. This may be very simply and inexpensively accomplished by opening separate entrances into each ward direct from the open air. In the existing hospitals, the communications with the common hall should be built up, and the same system carried out in the upper stories by opening the ward-doors on flying galleries. The lifts and stairs should be placed outside the building; the

existing halls and passages being still retained for the staff, and affording an approach to the respective stories, but no covered approach or communication of any kind allowed to remain between these and the wards. By these simple expedients, and the limiting the number of beds to three in each ward, it is probable a large saving of human life would result, and hospitalism become, like jail-fever and smallpox, a thing of the past. Pity the founders of the great hospitals so recently erected had not applied our dear-bought experience in their magnificent constructions. The sooner these altered arrangements are made in such great palatial institutions as St Thomas's and the Leeds hospitals, as well as the maternities and our other great charities subject to erysipelas, pyæmia, and phagedæna, the sooner will the insidious approaches and fell ravages of our common enemy, hospitalism, be subdued.

"Stow, in his *Survey*, mentions, in speaking of the King's Bench Prison, that the great mortality that occurred there in the six years preceding 1579 was produced through a certain contagion called "The Sickness of the House." Those learned physicians who uphold the crowding in large hospitals, and imagine they can meet the difficulty by disinfectants, I would refer to the simple experience of that benefactor of our species, John Howard, as conveyed in his preface a century since. He says: 'I guarded myself by smelling to vinegar while I was in those places. This I did constantly and carefully when I began; but, by degrees, I became less attentive to these precautions, and have long since entirely omitted them.' John Howard discovered and carried out the best means, on true scientific principles, of disposing, once and for ever, of 'the sickness of the house.' If the obstinate hospital crowdiers would take example by him, and meet as he did, crowding, the cause of 'the diseases of the house,' and, as he did, remove them, they would speedily produce an equally satisfactory result, and, like Howard, give up their futile attempt to meet the case of dealing with emergency by 'smelling to vinegar.'"—*Brit. Med. Journ.*, August 10, 1872.

## MEDICAL JURISPRUDENCE AND TOXICOLOGY.

63. *Carbon as an Antidote to Phosphorus*.—MM. EULENBERG and VOHL have recently shown that phosphorus may be absorbed by charcoal. They, therefore, propose to employ the latter coal as an antidote to the former. They recommend that animal charcoal be given, with this view, in pills, because in that form, charcoal requires less fluid in order to be swallowed, and further because animal charcoal made into a pilular mass with mucilage or gum tragacanth is preserved many years. Experiments made upon animals have resulted very favourably.—*Revue de Thérapeutique, Med. Chir.*, April 15, 1872.

64. *Is Strychnia the Antidote to Chloral?*—M. ORÉ, Professor of Physiology at the Bordeaux School of Medicine, answers in the negative, or at least he denies that Liebreich had the right to state that strychnia was the antidote to chloral, as an inference from the experiments which he (Liebreich) had performed. M. Oré has been going over Liebreich's experiments, and has not attained the same results. It will be remembered that Liebreich's experiments went to show: 1. An hypodermic injection of two grammes (half a drachm) is deadly to rabbits. 2. An injection of one milligramme and a half of strychnia is equally deadly. 3. If an hypodermic injection of one milligramme and a half of strychnia be made into a rabbit, even when the effects produced by a subcutaneous injection of two grammes of chloral have begun to show themselves, these effects are rapidly arrested and the animal is restored to life. On the other hand, it dies if no strychnia is administered.

M. Oré's counter-experiments, eight in number, have been conducted on rabbits of various sizes. The results are: If two grammes of chloral occasion death in certain cases they do not in all; and the same may be said of one and a half milligrammes of strychnia. M. Oré concludes that strychnia may be the anti-



## AMERICAN INTELLIGENCE.

## ORIGINAL COMMUNICATIONS.

*Removal of entire Scalp; Wound healed by Skin Grafting.* By S. C. BARTLETT, M.D., of Waterbury, Connecticut.

March 29, 1871, Miss M. T., of Naugatuck, Ct., aged 19, had her hair caught by a revolving shaft, which instantly removed the entire scalp from the occiput to the supercillii, including temporal regions, eyebrow, and left external ear.

When suppuration was established, I commenced skin grafting, as introduced by M. Reverdin, taking skin from the patient, until the excessive discharge from these additional wounds made it necessary to forego the operation. Many of Miss T.'s friends volunteered to furnish material rather than have the healing delayed.

In this way I obtained sixty-four pieces of skin, these being subdivided, until one hundred and fifty were applied to the head.

Five months after the accident, the wound being nearly two-thirds covered with new growth, the patient was affected with erysipelas, which destroyed all the growth from the margin, and most of the transplanted growth, a few of the large pieces remaining uninjured.

After four months' time, required to bring the wound again into healthy condition, skin grafting was resumed, and continued without interruption, until complete covering of the wound was accomplished.

The unusually large surface to be healed afforded fine opportunity to illustrate the virtues of skin grafting, the principal being the rapidity with which surfaces may be covered with a firm growth resembling ordinary cicatrization.

The application of large circular pieces of skin should be commenced as soon as possible.

These should be but little separated from each other, and near the margin, to prevent contraction. In this case there has been breaking away at the junction, the sound skin retreating, and engrafted portion extending to fill the space. The pieces have a firm growth until about three times the size planted. Beyond this limit they have less vitality, and easily break away, as is noticed in extended marginal healing of large wounds.

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*Diplopia following the Administration of the Hydrate of Chloral.* By WM. R. MANDERILLE, M.D., A. A. Surgeon, Post Hospital, U. S. A., Aberdeen, Mississippi.

In the No. of this Journal for January last is reported a case in which the hydrate of chloral caused double vision, and I report the following case, which is similar in some respects:—

A gentleman was suffering great pain from a carious dens sapientiae, and for the relief of which he took thirty grains of chloral, which affected

him but slightly. In half an hour later he took another similar dose, which relieved the violence of the pain for about two hours, when he took a third dose, which soon put him in a deep and heavy sleep. The next morning he had the tooth extracted. Throughout the day he had an intense desire to sleep, which he tried to resist for some time, but at last had to succumb, only being aroused to take his meals, which he ate with much relish, not feeling the least nausea or heaviness about the head. The next day he also slept a good deal, and his eyes became watery, eyelids red, and somewhat swollen, and the conjunctiva very much injected.

He complained of seeing everything double, and of specks continually floating before his eyes—*muscæ volitantes*—which annoyed him so much, that at times he could scarcely see. This condition of his eyes lasted three days, but left them weak and watery for twelve days after.

ABERDEEN, August 13, 1872.

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*Puerperal Convulsions successfully treated by Chloroform in Small Doses.* By J. O. SANDERS, M.D., of Carrollton, Mississippi.

I was called, January 16, 1872, to Mrs. K., a German woman, aged 17, in labour at full term with her first child. She had small limbs, and rather narrow pelvis; was neither anæmic nor plethoric. The family spoke so little English that I could learn nothing of previous history of case, and can only describe it as it presented itself at the time. The pains came on at 8 or 9 o'clock P.M., with violent convulsions, which continued until delivery, nearly twenty-four hours afterwards. I first saw the case some five or six hours after labour had commenced. She had then had three or four very violent convulsions, biting her tongue, and foaming at the mouth, being from the first perfectly unconscious. Soon after my arrival, I made an examination per vaginam, and found the os uteri dilated to the size of a silver quarter dollar, quite rigid, and not at all dilatable. The uterus was in a state of rigid contraction, and remained so during almost the entire labour. For an hour after my arrival there having been no convulsion, I began to entertain the hope that they had ceased and left her for a short time, but was hastily recalled by the cries of her attendants, who stated that she was dying. Hastening to her bedside, I found the spasm passing off. After that I remained closely by the patient, and found that the spasms recurred pretty regularly at intervals of perhaps an hour, or synchronous with the pains.

Now the fact that I particularly wish to direct attention to in this case was the controlling effects of chloroform upon those spasms, administered in the smallest quantities.

The patient was a labouring woman, neither plethoric nor anæmic, rather poorly developed, small limbs, and rather narrow pelvis, the latter not measured, but evidently less than medium. My manner of administering the anæsthetic in this case was to watch closely for the first symptoms of spasm, the slightest rigidity or contraction of any of the muscles, the turning of the eyes to one side, which I always found to precede the spasm, and with not exceeding twenty or thirty drops of the potent drug I did not fail in a single instance to control almost entirely the violent muscular contractions which were so plainly marked in the beginning; and, to prove that the spasms were not of themselves getting lighter, whenever I chanced to be out of the room, or relaxed my diligence, they greatly increased in intensity and duration. In the course of eighteen hours I administered less than two ounces of chloroform, and the effects

were truly magical. The woman was wholly unconscious during the entire time of labour, and knew nothing of the birth of her child until several hours afterwards. She fell into a tranquil sleep as soon as labour was over, and had but two or three slight spasms afterwards, which were easily controlled by a few drops of chloroform.

The child was in a very precarious condition when born, but is now six months old, and reported to be a fine healthy boy. The mother recovered without an unpleasant symptom, and is at present date alive and well.

From my experience in such cases, I would put my faith in chloroform, and regard venesection, except in some cases of great plethora, as worse than useless.

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*A Pin retained in the Throat fourteen months.* By A. ADY, M.D., of West Liberty, Iowa.

I was called to J. W., May 11, 1872, who stated that fourteen months previous he had got a pin in his throat. It was attended with considerable pain, and loss of voice. After an interval of some two weeks, efforts were made by an intelligent surgeon to remove it, but it could not be found. His voice gradually returned, so that in three months he could talk distinctly. The pain and soreness abated somewhat, but were never entirely absent. About three days before I called, his throat commenced troubling him more than usual. He experienced a feeling as though the pin was loose in his throat, and by the time I saw him, he was suffering acutely. Passing my finger down his throat, I felt the point of the pin extending forwards from the lower part of the posterior wall of the pharynx. It projected upwards at an angle of about thirty degrees, the point resting against the arytenoid cartilages. The head was firmly imbedded in the pharyngeal wall. I made several attempts to remove it with a pair of common œsophagus forceps, but they would not hold tight enough. I then took a small pair of polypus forceps, and slipping them down over the blades of the outer forceps, as near the pin as possible, I succeeded in grasping it tight, and pulled it out. The pin was found to be  $1\frac{3}{4}$  inch in length. For the space of an inch from the point it was corroded; the rest, including the head, was bright, showing how much had been imbedded in the tissues. The pin must have left the pharynx, and travelled through the neck to some extent. It was evidently not in the pharynx or the œsophagus when its removal was first attempted, for the sponge probang was passed the whole length of the œsophagus without encountering anything. Sticking into the throat point foremost, would indicate that it had made a circuit great enough to reverse ends. Patient complained for some months, during the time that it was retained, of severe pain along the course of the omohyoid, which would look as though the pin had been in contact with the descendens noni nerve.

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*Case of Abnormal Structure of the Female Genital Organs.* By T. R. BROWN, M.D., of Baltimore, Maryland.

I was called some three months ago to a lady, nineteen years of age, the history of whose case would not be pertinent to the subject matter of this article, which is to describe some anomalies observed on post-mortem examination. I will simply state that, four days previous to the patient's death, she had quite a profuse bleeding at the nose, lasting about forty-eight hours, and concluding with a sort of nasal catarrh, which, taken

with the facts that she had never menstruated, and that the nose-bleedings were frequent in their recurrence, induced an examination, post-mortem, of the internal and external organs of generation—in which examination I was assisted by Dr. Cockery.

The vulva was natural in formation and appearance, with the mons veneris and external surface of labia majora well covered with hair; no clitoris could be perceived. The vagina, which was a simple cul-de-sac, about two inches long, was dissected out without encountering the crura clitoridis. It was destitute of rugæ, hymen, carunculae myrtiliformes, and had no communication with the "os uteri." The bladder and rectum were firmly adherent to each other, instead of being separated by an uterus, for which we hunted in vain. The bond of adhesion between bladder and rectum was the broad ligament, occupying its usual position, of a crescent shape, and imbedded in either horn of this crescent, near the summit, about one and a half inch internal to and on a line with the iliac fossa, was a nodular body, dense in structure, of the size of an apricot kernel, to which were attached a perfect ovary, Fallopian tube, and round ligament. The parts adjacent to the ovaries were greatly congested, evidently connected with a recent ovulation; and an incision into one of the ovaries showed several corpora lutea, with their corresponding cicatrices, on the outer surface.

I am of opinion that the nodular bodies referred to were what would correspond to the superior cornua of the uterus, and the non-striated muscular fibre, found by Dr. Tiffany in a small section, confirms my impression of its being uterine tissue.

The mammae were unusually well developed, and the symmetry of the patient's figure well illustrated the vigour of her previous health, and her powers of endurance in sickness.

Among the many interesting points in this case, I will refer, in brief, to two or three:—

1st. The anatomical fact, well borne out by this anomaly, to wit, that the uterus and vagina are formed by the coalescence of the ducts of Muller, as well as the Fallopian tubes, and the absence of the uterus, as in this case, necessitates the absence of the perfectly formed vagina.

2d. I ascertained after the patient's death, that, notwithstanding there was neither vagina nor clitoris, she had had sexual desires, which, circumstances seem to show, had been gratified.

The third point of interest was the vicarious menstruation by epistaxis, tending to prove that this monthly discharge is necessary to the maintenance of health, irrespective of its point of exit, and is associated, with perhaps very few exceptions, with ovulation.

## DOMESTIC SUMMARY.

*Cerebro-Spinal Meningitis.*—Dr. MOREAU MORRIS made some remarks before the New York Academy of Medicine on the existing epidemic of this disease in New York. "The various symptoms noticed," he stated, are "chilliness, acute pain in spine and limbs, clonic and tonic spasms, opisthotonos, and sometimes distortion of vision. There is often hyperæsthesia of skin. Rose-coloured spots, not disappearing on pressure, are noticeable in this disease; these pass away on the third or fourth day. Herpetic eruptions have been noticed. Epi-

demic meningitis is non-contagious, and the idea of specific contagion will have to be abandoned. Clinical experience and knowledge of hygienic laws prove that this disease is caused by miasmatic poison. Congestion of bloodvessels, with exudations of fibrin and pus under the meninges of the brain, are prominent lesions.

"The first cases of this disease were reported by gentlemen in this city on the sixth of January; and the extraordinary filthiness of the city has caused much anxiety in medical circles since that date.

"Whole number of cases reported to the Health Department to date is 412; deaths, 216. These cases occurred in 360 houses. Five cases occurred in children between 1 and 3 years of age; 125 between 1 and 5 years; 106 between 5 and 10 years; 66 between 10 and 20 years; 29 between 20 and 30 years; 17 between 30 and 40 years; and 20 over 40 years of age.

"The drainage was faulty in all the dwellings where cases occurred; and they were ascribed to faulty drainage in the majority of cases. In sections of the city where tenement-houses predominate, with dense populations, especially on the eastern side of the town, there cerebro-spinal meningitis has particularly abounded. These houses have wash-basins without water-traps and overflow pipes; the cesspools having no connection with the sewers. Cases have broken out as well in brown-stone houses, in fashionable localities, with all the Croton water conveniences; in fact, some of these houses have given the Health Board much trouble on account of the imperfect connection with the sewers, etc."

Dr. ALONZO CLARK remarked, that Dr. Morris had pretty well exhausted the subject, with the exception of the treatment. He had seen cases where the spinal symptoms were not developed, only the cerebral. In one case of true spinal meningitis the patient remained for two weeks in a state of opisthotonos, and finally recovered. Severe pains in the limbs remained for some time. In other cases the chief pain was in the head, the pain in the limbs subsiding. He remembered one fatal case where pneumonia set in after the brain-symptom had subsided.

In none of the cases in hospital was there any ecchymotic eruption, but a papillary or herpetic variety was noticed, with a depression in the centre resembling smallpox. The ecchymotic eruption which first attracted attention was not seen in these cases.

In regard to the treatment, if there was no congestion, he ordered leeches to the spine and a vapour bath; but, on account of the restlessness of patients, that mode of treatment could not be carried out in hospital. Now the early use of opium is advocated, and is useful. Bromide of potassium is of decided service, but not in connection with opium. At a temperature of 103°, the application of the wet pack is of decided benefit in reducing the temperature. Beyond this we had scarcely advanced.

Dr. Morris's figures gave a mortality of over one-half. One death in four, or possibly one in three, is what Prof. Clark has seen in hospital practice. He said that at an early stage it would be advisable to take blood.—*Medical Record*, June 15, 1872.

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*Veratrum Viride as a Hæmostatic.*—Dr. J. W. COLLINS calls attention (*Am. Practitioner*, Sept. 1872) to the veratrum viride as a very powerful and very reliable agent for the arrest of hemorrhage, both active and passive. "It should be given," he says, "in doses of from three to fifteen drops, repeated every one, two, or three hours, according to the urgency of the case, always carefully watching its effects."

Dr. C. has used it with benefit, he states, in hæmoptysis, in aneurism, to lower the action of the heart, and thus favour coagulation in the sac, epistaxis, menorrhagia, secondary hemorrhage after amputation of cervix uteri, in hemorrhage from uterine cancer, and flooding.

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*Mono-bromate of Camphor in Delirium Tremens, and in Chorea.*—Dr. ALLAN McLANE HAMILTON relates (*New York Med. Journal*, July, 1872) a case of delirium tremens successfully treated by mono-bromate of camphor. He gave it in doses of five grains made into a pill with conserve of roses. A



single dose caused sleep in half an hour. No bad effects followed even when ten grains were taken.

Dr. H. says he has also tried the same article in chordee, and is convinced that it excels any combination of camphor and opium, or any of the usual remedies.

*Amputation at the Knee-Joint.*—Dr. HENRY GINNS, Jr., records (*Pacific Med. and Surg. Journ.*, Sept. 1872) an interesting case of this. The subject was a female, æt. 46, "suffering from tuberculosis of the left ankle-joint." Dr. G. amputated the leg at the lower part of the middle third. The whole disease, it was found, was not removed by this operation, but the condition of the patient would not allow at that time of amputation higher up. The stump became swollen, inflamed, and painful, and two openings formed, leading to large sinuses. Various methods were tried to induce healing, without success. After a time the patient's health greatly improved, and Dr. G. amputated at the knee-joint. "A long anterior skin-flap—the incision . . . . . two inches below the tuberosity of the tibia—was dissected . . . . . patellæ was then divided; next the ligaments of the joint were severed; and finally the knife was extended directly downward through the tissues, making no posterior flap. Three ligatures were applied to the popliteal and to two small branches. The edges of the flaps were retained in apposition by seven or eight silver wire sutures, supplemented by adhesive straps, and the stump was enveloped in patent lint and bandages, and was subsequently dressed with wet picked lint covered with oiled silk.

"Examination of the excised part corroborated the diagnosis of its condition. The deep sinus between the bones extended nearly to the head of the tibia, and was, like the cavities about the end of the stump, filled with jelly-like matter. The bones were not necrosed, their cut extremities being well rounded, but their structure was very light and spongy, and full of oily matter, as in the case of the bones of the foot.

"The subsequent progress of the case was everything that could be desired. Shock was speedily recovered from; indeed, it existed to so small an extent as not to be worth considering. In a day or two the appetite became good; sleep, at first insured by morphia, soon came naturally, the spirits were buoyant, and all the bodily functions satisfactorily performed. For some days the watery discharge was profuse, no doubt from the articular surfaces; this gradually ceased; primary union took place throughout nearly the entire wound, and in three weeks there were but three small surfaces still unhealed. In two weeks the patient was sitting up in a chair, and one ligature had come away; in three weeks she was about on crutches. Two of the ligatures, including that upon the popliteal, remained firmly fixed for three weeks. Being convinced that they were no longer attached to the arteries, and seeing that they interfered with the healing process, I removed them by force and at the expense of considerable pain."

The patient made a satisfactory recovery, and Dr. G. states: "No one could desire a better stump than this operation made. The patellæ fitted in nicely between the condyles, and made a finely rounded end, in no wise intolerant of pressure, while the cicatrix, being on the posterior surface, and from two to three inches above the extremity, was entirely removed from the effects of chafing or pressure."

*Dislocation of the Humerus into the Axilla.*—Dr. E. P. BENNETT, of Danbury, Connecticut, describes (*Medical Record*, March 13, 1872) a method of reducing this dislocation which he claims as original. This claim cannot for a moment be sustained. It was devised more than three-quarters of a century ago, as we long since showed (see No. of this *Journal* for February, 1837, p. 387), by the patriarch of American surgery, Professor Physick, and put in practice by him in 1790. It was subsequently regularly taught in his lectures when Professor of Surgery in the University of Pennsylvania, and is fully described in the *Elements of Surgery*, by his nephew, Dr. J. S. Dorsey; it has been for more than half a century a recognized method in this city, and is noticed in Hamilton's exhaustive *Treatise on Fractures and Dislocations* (4th edition, p. 553).

*Rupture of the Urinary Bladder.*—Dr. ERSKINE MASON, Adj. Prof. Surg. Univ. New York, reports (*New York Med. Journal*, Aug. 1872) a case of this very serious and rare accident successfully treated by him. The subject of it was a man æt. 26, admitted into Roosevelt Hospital, who after a fall complained of inability to urinate with urgent desire to do so. A careful examination of the patient satisfied Dr. M. that there was a rupture of the urinary bladder, and he laid open that organ through the perinæum, as in the lateral operation for stone, and thus gave exit to the urine. The patient was discharged well on the thirty-ninth day after the accident and the thirty-seventh after the operation.

Dr. M. makes some very instructive remarks on this injury and refers to the admirable papers in regard to it (*New York Med. Journal*, May, 1851), by Dr. Stephen Smith, who gives a table of seventy-eight cases, only five of which are reported as cured.

Dr. M. further discusses the various methods of operative interference which have been proposed, and strongly advocates the one he adopted. He claims for Dr. Wm. J. Walker, of Boston, the credit of first putting into practice, and he believes of originating, this mode of treatment. This surgeon treated successfully, in 1843, by this method, a case of rupture of urinary bladder. See *Communications of the Massachusetts Medical Society*, vol. vii. p. xvii., May 29, 1845.

*Ovariectomy Operations.*—Dr. J. E. OWENS records (*Chicago Med. Journal*, Sept. 1872) the case of a woman, æt. 28, upon whom he performed ovariectomy on the 2d August, 1872. Upon opening the abdomen, the tumour was found to be quite movable, there being but few adhesions about its upper part. The difficulties of removal were, however, very great, on account of the existence of intimate and strong adhesion about the pedicle and base of the cysts. A small cancerous growth was found growing from the posterior wall of the body of the uterus. These adhesions being, for the most part, confined to the base, permitted a tolerably free movement of the tumour. The clamp used in this case was Green's modification of an instrument, devised by Hill, of Augusta, Maine, for the removal of intra-uterine polypi.

Vomiting of a more or less acid, greenish fluid began soon after and continued until the patient's death, despite various remedies. On the 5th August, the wound except at its lower extremity had well closed by adhesive inflammation. August 8. Discharge from the abdomen began to grow offensive. From this date to within a day or two of her death, the cavity of the abdomen was washed out with carbolic acid water (strength 1 to 100 at first, and finally 1 to 80 of the temperature of the body), from one to three times daily, using at each washing from forty to one hundred and twenty ounces. August 13. The discharge, having been very profuse for some days, assumed at this date the character of feces. August 18. The discharge saturated not only the body clothing, but the bed and bedclothes. With the hope of lessening the discharge of fecal matter from the wound, a warm water enema was ordered. The greater part of the injection passed through the abdominal opening. August 20. Died at 1 o'clock P.M. The pulse reached 132, and never fell below 120. Cause of death stated to be exhaustion from peritonitis and perforation of small intestine, the result of inflammatory softening.

Another case of ovariectomy performed by Dr. HUNTER MCGUIRE, on a woman æt. 62, is recorded in the *Virginia Clinical Record* (July, 1872). The operation was performed July 1, 1871. "On reaching the cavity of the abdomen the tumour was found to be bound down by extensive adhesions, vascular and so firm as to require division by the scissors. The walls of the cysts were so thin and delicate that they were all ruptured in the efforts made to break up the adhesions, and about four gallons of dark, coffee-coloured, albuminous fluid were discharged.

"The solid portion of the tumour was then with some difficulty removed, through an incision six inches in length; in character it was cystoid cancer, and weighed 3½ pounds. A large portion of the wall of one cyst was obliged to be left in the abdomen, because of its firm attachment. The pedicle was very short, the size of a man's wrist, and closely attached to the uterus. From its

size the clamp could not be applied, and it was secured by ligature. The left ovary was slightly enlarged, but otherwise healthy.

"The abdomen was cleansed from all blood, and the wound closed by five silver wire sutures. The operation lasted one hour and three-quarters, and about  $\frac{5}{8}$  x of blood were lost. The patient was placed in bed and stimulants administered, but she never reacted from the shock of the operation, and died collapsed at 6 A.M., July 2, sixteen hours after its completion."

Prof. T. GAILLARD THOMAS records (*Am. Practitioner*, July, 1872) three cases of double ovariectomy, all successful.

Dr. Geo. HOLMES BIXBY records (*Journ. Gynecological Society*, Boston) a successful case.

*Reduction of an Inverted Uterus of Twenty-two Years' Standing.*—The *Buffalo Medical Journal* (Aug. 1872) contains the report of a case of complete inversion of the uterus of twenty-two years' standing successfully reduced by Prof. JAMES P. WHITE, by the method described by him in the No. of this Journal for April last, p. 391 *et seq.*

*Artificial Food for Young Infants.*—Dr. CHARLES P. PUTNAM has recently been investigating this subject, and in the *Boston Med. and Surg. Journal* (Aug. 1, 1872) gives as his conclusions that the only proper food for a newborn baby is the milk of its mother; that her place is best supplied by a wet-nurse; that the great obstacle to the use of cow's milk is not the insolubility, but the irritating character of its coagula; that this may be avoided to some extent in many ways, among others by the addition of a little starch and gelatine<sup>1</sup> for the purpose of effecting a mechanical separation of the particles of coagula; and, finally, that for any other purpose starch and gelatine are never to be used.

*Chloral Hydrate in Pertussis.*—Dr. P. B. PORTER, Physician to the New York Dispensary for Sick Children, relates (*New York Medical Journal*, August 1872) several cases of pertussis treated by chloral hydrate, and says that from his experience he is "fully convinced of the marked effect of chloral hydrate in alleviating the symptoms of pertussis, and that there seems to be some evidence (though my number of cases is certainly very limited) to show that it has a positive effect in cutting short the disorder. It is the only remedy I have employed in this affection at the Children's Dispensary for some time." He further states that in not a single case, so far as could be ascertained, was the remedy exhibited without its being followed by an alleviation of the symptoms, and in no case has any injurious effect been produced by it.

*Blindness and Deafness in Consequence of Epidemic Cerebro-Spinal Meningitis.*—Dr. H. KNAPP states (*Medical Record*, Aug. 15, 1872) that "during the last three months and a half there have come under my care forty-one cases of blindness or deafness, the consequence of cerebro-spinal meningitis, which has for more than six months assumed an epidemic character in this part of the country. Among the forty-one patients thirty-one were deaf on both sides, eight were blind with one eye, mostly the left, one was blind with both eyes, and one was deaf on both sides and blind on one. In all cases the diagnosis of cerebro-spinal meningitis could be well established. The symptoms were: mostly a sudden attack of headache, increase of temperature, vomiting, convulsions, with predominant opisthotonos, unconsciousness, delirium, constipation, great debility after the acute symptoms, staggering gait with a tendency to fall sideways, lasting for weeks and months after the recovery. Among the complications I may mention inflammation of the joints in some cases.

"The affection of the eye begins usually in the first weeks of the general disease with the following symptoms: circumcorneal injection, discolored iris, ragged pupil, fundus oculi dull, its details not recognizable, or the fundus yielding only a sombre red colour, or appears black. Hypopyon and yellowish exu-

<sup>1</sup> As recommended by Meigs and Pepper. "Diseases of Children," p. 304.

dation plugging the pupil are not infrequent. The cornea in some rare cases becomes ulcerous; in others, the conjunctiva and lids are œdematous and very red, the eyeball protrudes, and exceptionally bursts, suppurates, and shrinks. Ordinarily, the injection of the conjunctiva subsides, the cornea clears up, the hypopyon and exudation in the pupil disappear, and the eyeball assumes a strikingly peculiar and characteristic appearance, which I have only seen in cerebro-spinal meningitis, puerperal fever, and very seldom in typhoid and typhus fevers. The iris is dull and bulges forward like a cone, its periphery, however, is usually drawn backward. The pupil is rather narrow, ragged, and immovable. Through the transparent lens, which has advanced with the iris, a dull white surface is visible in the vitreous chamber. The eyeball is commonly softer and smaller than natural. Sight is completely and irrevocably lost. Later, the crystalline becomes cataractous. The eyeball will remain smaller and softer, squint outward, but never give rise to other inflammations, or sympathetic affection of the other eye. I supply these facts from my observations of the epidemic of cerebro-spinal meningitis which reigned in the upper valley of the Rhine eight years ago. This eye-affection has been mistaken for medullary cancer (glioma) of the retina, but may be distinguished from it by its acute development in combination with the general disease, the peculiar protrusion of the centre of the iris and its retraction at the periphery, the dull white reflex from behind the pupil, and the diminution of size and tension of the globe.

"The nature of the eye-affection is purulent choroiditis, probably metastatic. There have been other changes of the eye observed in cerebro-spinal meningitis, principally hyperæmia and inflammation in and around the optic disk; they are rare and not specifically dependent upon this form of meningitis, but on hyperæmia, exudation, and proliferation in the cranial cavity in general.

"The *ear-affection* in cerebro-spinal meningitis does not show symptoms so peculiar as the eye-affection. In the early stage hyperæmia of the middle ear is commonly present, the drumheads being dull, yellowish, the region of the handle and upper portion red, and the light spot faint, smaller, or absent. The pharynx is generally red. The tympanum is inflatable, with a rough blowing sound, after which the appearance of the membrana tympani is not essentially changed. In very rare cases only the affection rises beyond this condition of a mild catarrhal otitis media, developing into purulent inflammation of the drum, with perforation of the drumhead and otorrhœa, which ceases in one or several weeks. These symptoms on the part of the middle ear are, however, of subordinate significance when compared with those furnished by the *inner ear*. In some cases patients at first find sounds around them—for instance, the song of a canary-bird—intolerably harsh, but very soon the hearing-power will diminish, and in nearly all cases be totally and permanently destroyed. When the patients retain their consciousness impairment of hearing may be noticed as early as the second day of the disease, increasing day by day to total deafness in a week or two. In the majority of cases the deafness is only discovered when the patient awakes from his stupor; and may then be total or partial, increasing, in the latter instance, to total deafness very soon. I find, however, in my notes some cases in which hearing was still present some weeks after the disappearance of the severe symptoms of the acute disease, and was lost during the recovery. In all cases the deafness was bilateral, and, with two exceptions of faint perception of sound, complete. Among the twenty-nine cases of total deafness there was only one who seemed to give some evidence of hearing afterward. The treatment consisted in leeches behind and before the ear, blisters, tincture of iodine, ung. tart. stibiat. behind the ears, and the use of the galvanic current. I have seen no good results from this treatment, nor have I heard of a better one to substitute it. \* \* \* The nature of the ear-disease is in all probability a purulent inflammation of the labyrinth, by which the membranes of the inner ear are destroyed in a similar way as the membranes of the eye by the purulent choroiditis. Heller and Lucae have corroborated this by three post-mortem examinations. No disease of the middle ear could annihilate the hearing so completely that no sounds whatever, not even a tuning-fork vibrating on the cranial bones, is perceived."

*Lyell's Displacement of the Radius.*—Prof. P. S. COXSE records (Clinic, April 20th, 1872) the two following cases of this:—

"Case 1. P. N., et. 2 years. Some hours before hurt by nurse swinging her by the hands; afterwards very fretful, complaining of pain when left arm was touched. When seen the left forearm was partially flexed on arm, the hand about three-fourths fully pronated, the motions of shoulder elbow and wrist unimpaired and painless, the slightest attempt at supination caused pain (though gentle motion showed that the head of the radius moved with the shaft), no tenderness on pressure upon any part of the forearm and hand except over the upper sixth of radius. Not being able to determine the nature of the injury, but from the tenderness suspecting incomplete fracture somewhere in the upper fourth of the radius, I put the forearm in a state of complete supination and secured it by adhesive strap to a dorsal splint. The child very quickly became quiet and was sent to her home a short distance in the country. On the fourth day afterwards (as I learned from the physician in charge), upon taking off the splint it was found that the difficulty, whatever it had been, had entirely disappeared, all motions of forearm and hand being painless and complete. Further treatment was consequently discontinued. A few days afterwards I saw a paper by Dr. Lyell, originally published in the *Glasgow Quarterly Journal*, calling attention to a "curious displacement of the radius," previously undescribed by surgical writers, so far as known occurring only in children under five years of age, generally in girls, apt to be frequently reproduced. The described symptoms of this displacement agreed so well with those observed in the case above mentioned, that I was satisfied of the nature of the latter. Fortunately for my patient I had adopted the very treatment recommended by Lyell, viz., forced supination, though the application of the splint was an unnecessary annoyance to the child.

"Case 2. S. B., et. 2½ years, hurt her right arm in some way unknown. Symptoms identical with those of Case 1, given. Recognizing now the nature of the accident, I supinated the forearm, making at the same time slight pressure over the head of the radius. All pain and deformity were at once relieved, the child began laughing and playing around the room. Up to the present writing there has been no recurrence of the displacement.

"*Lyell's displacement*" (as I think in justice to the describer the injury should be denominated) is not to my knowledge referred to in any surgical work. I have never seen but the two cases mentioned, yet these cases were met with within three weeks of each other. The relief is easy and immediate when the character of the injury is recognized. Of the exact nature of the injury I have been unable to satisfy myself. Very probably Lyell is correct in his belief that 'the radius somehow catches on the adjacent ulna and is there retained,' whether or not from *over-supination*, as he thinks, is perhaps questionable."

*Syphilis treated by Syphilization.*—Dr. J. C. HUTCHINSON, of Brooklyn, reported to the New York Academy of Medicine (June 6th, 1872) three cases of this. "The progress of the treatment," he says, "was carefully observed by myself as well as by many other gentlemen who were interested in the question. The disease had resisted all the usual remedies, and, as the patients steadily grew worse, they promptly consented to have syphilization practised. Their co-operation was thorough and complete, and they soon manifested the greatest interest in having the inoculations regularly performed."

The three cases reported, Dr. H. states, had gone on "from bad to worse under the various treatments which had been adopted, and were regarded as utterly hopeless when Prof. Boeck began the inoculations. Dr. M. H. Henry, editor of the *American Journal of Syphilography and Dermatology*, who visited the patients with Prof. Boeck, declared that they were the most unpromising cases he ever beheld. The experience afforded by three cases of tertiary syphilis treated by inoculation is insufficient to justify us in determining the value of syphilization as a remedy for syphilis; a much longer experience would be necessary for this purpose. It is sufficient, however, to induce me to question the justness of the inexorable rule laid down by Messrs. Lane and Gascoyne, of the London Lock Hospital, and indorsed by one of our highest American authorities, Prof. Bumstead, who observed the effects of

syphilization in three cases at the New York Hospital (*Am. Jour. Med. Sciences*), 'that syphilization is not a treatment which can be recommended for adoption.' In such chronic cases as are here reported, which fail to yield to more ordinary treatment, syphilization is surely a treatment which *can* be recommended, and I feel that I would have been justly censurable had I omitted to avail myself of the advice of so experienced and conscientious an observer as Prof. Boeck has proven himself to be both here and abroad.

"It cannot be expected from the limited experience herein detailed that I shall indorse all the positions of the advocates of syphilization, but I feel that I shall be warranted in proffering this plan of treatment, novel and unpopular though it be, to such patients as shall persistently defy, and grow worse under the plans that are now authorized and accepted; and that such cases do occur, I presume no student of syphilis will deny.

"Dr. A. C. Post believed the theory of syphilization, or the introduction of the syphilitic poison into the patient until he is no longer susceptible to it, a false one. If the theory be correct, the chancroidal inoculation would be the proper one. It was supposed by some, that the establishment of a large number of pustules in different parts of the body tended to facilitate the elimination of the poison from the body and to cure the disease.

"Dr. ISAAC E. TAYLOR stated that syphilization had been tried in Charity Hospital before Dr. Boeck came to this country, and after his arrival syphilization was tried on from eighty to ninety cases, but without success; some of the cases were afterwards cured with mercurials.

"At Bellevue Hospital syphilization was adopted in the case of a woman, but unsuccessfully; mercurials were used subsequently with success. No good result had followed syphilization in Charity Hospital at the time Dr. Boeck left this country, and he confesses that he was not favourably impressed with this plan of treatment, consequently he had not resorted to it."—*Med. Record*, July 15th, 1872.

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*Treatment of Strictures of the Urethra by Laminaria Digitata and Galvanism.*—Dr. ROBERT NEWMAN read before the Medical Journal Association of New York a paper on this subject. To insure success by this mode of treatment he gives the following rules in the use of laminaria bougies:—

1. The bougie must be made from an unblemished piece of the plant, taken out of the middle, made with care and equal in its whole length and size. If there is the slightest suspicion of unevenness it should not be used.

2. That part of the bougie which will occupy the portion of the urethra below the last stricture, and particularly *that* part of the bougie which enters the bladder, must be varnished previously. Mastic varnish can be used. If the varnish is applied just before using, the laminaria may dilate a little, but if several coats are applied and allowed to dry, no expansion can take place.

3. As any oily substance hinders the expansion, no oil must be used. The bougie before introduction must be placed in cold water, until it gets a soft, velvet-like touch.

4. The bladder must be emptied before the operation, to avoid uneasiness and overdistension.

5. The urethra ought to be injected with water, to relax the parts and favour the moisture for rapid dilatation.

6. The measure of the urethra and seat of strictures must be carefully taken, notes made, and the bougie prepared accordingly.

7. The bougie, when ready, must be introduced at once, straight, without hesitation, twisting, or resting in its passage; otherwise it will cause pain, or, as dilatation goes on immediately, it will not reach the desired depth.

8. After insertion, the bougie must be left alone, and not meddled with, or tried to move.

9. It must be left inside undisturbed for two to four hours, according to circumstances, consulting the feelings of the patient.

10. The patient during this time is left in a recumbent position, and attended or observed by the surgeon.

11. In removing the bougie, the surgeon takes hold of the bougie, and uses firmly and gradually tractions in the same direction.

If some surgeons have failed with laminaria, they either have not observed these precautions, or they have had imperfect bougies, or selected impracticable cases.

This treatment is most indicated when the stricture is very small, almost impermeable, and no time can be lost, as the No. 1 bougie of laminaria can be introduced easier than the usual sounds or catheters. In a few hours the patient is relieved, and can micturate without difficulty. No bad results can follow, nor will it interfere with his attention to business. This latter advantage is a great consideration, as the treatment with divulsors or dilators almost always causes pain, sufferings, and detention in bed and from business. As soon as the stricture is dilated so far that a steel sound of a larger calibre can be introduced, the laminaria has done its duty, and it is better to abandon its further use, and continue with other means. These are either steel sounds or galvanism.

With regard to the employment of galvanism he states "from authorities on this subject, that Mallez and Tripier deserve the credit for having revived, if not originated, the treatment of strictures by galvanism methodically with improved instruments and appliances.

"The success in curing a stricture by the galvanic battery depends mainly upon the chemical effect of absorption of the altered tissues forming the stricture. Alkalies go to the negative; acids to the positive pole. Consequently we use the negative pole to produce the effect of absorption, which will act as a caustic alkali, and not produce any cicatrix.

"To regulate the strength of the battery to the strength of the patient is an important point in electro-therapeutics. In all drugs we have an established dose, which we again regulate according to circumstances and the individuality of the patient. Should electricity be given at random? The regular dose in the shape of the strength of the current ought to be ascertained, otherwise the intended remedial effect may be detrimental. Now the question arises, what instrument will best fulfil our purpose? In most of my experiments I have used a Stoehrer's sixteen-cell galvanic battery; but in the use of this very convenient apparatus I have met with some difficulties, which it was impossible to overcome without very complicated auxiliary instruments. This battery permits grades only by two (2) cells, which, increasing or diminishing, is too great a difference, and the intensity of the galvanic current, thus altered, is too sudden, causing in the patient a nervous irritation, shock, and pain.

"The size of the elements in Stoehrer's battery is far too large, and the quantity of electricity thereby generated is too powerful to produce the proper effect; consequently the destruction of tissue is too great. This, again, will cause pain, which patients refuse to endure.

"A large surface of battery will cauterize with more intensity than any other known caustic. By using the necessary amount of electrical current thus generated, to enlarge the sphere of action, too much inflammation of the surrounding healthy tissues may supervene, and thus aggravate the disease. No action should ever destroy healthy tissues, the only effort to be made is to restore the morbid parts to their proper normal condition of health; therefore the concentration of the electrical current should be strictly confined to the diseased locality only."

From the author's experience he has discovered that the following rules ought to be observed in its application:—

1. Before the operation, the susceptibility to electricity of the patient should first be ascertained, and the strength of the battery arranged accordingly.

2. The current should never be made so strong as to cause pain, or prolonged too long, but proportioned to the strength of the patient.

3. The poles must be placed first, and then the current introduced. Shocks and interruption of current should be avoided.

4. Repetitions of the operation must be done at intervals of *at least* fourteen days, or, better, four weeks.

5. Mild currents, continued and repeated, work better than strong currents, which, if given only through the metal, cause pain, and may destroy tissues, without curing the strictures.

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